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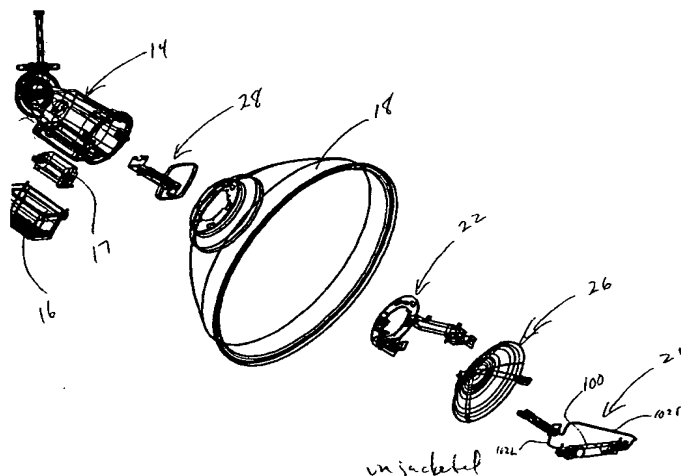
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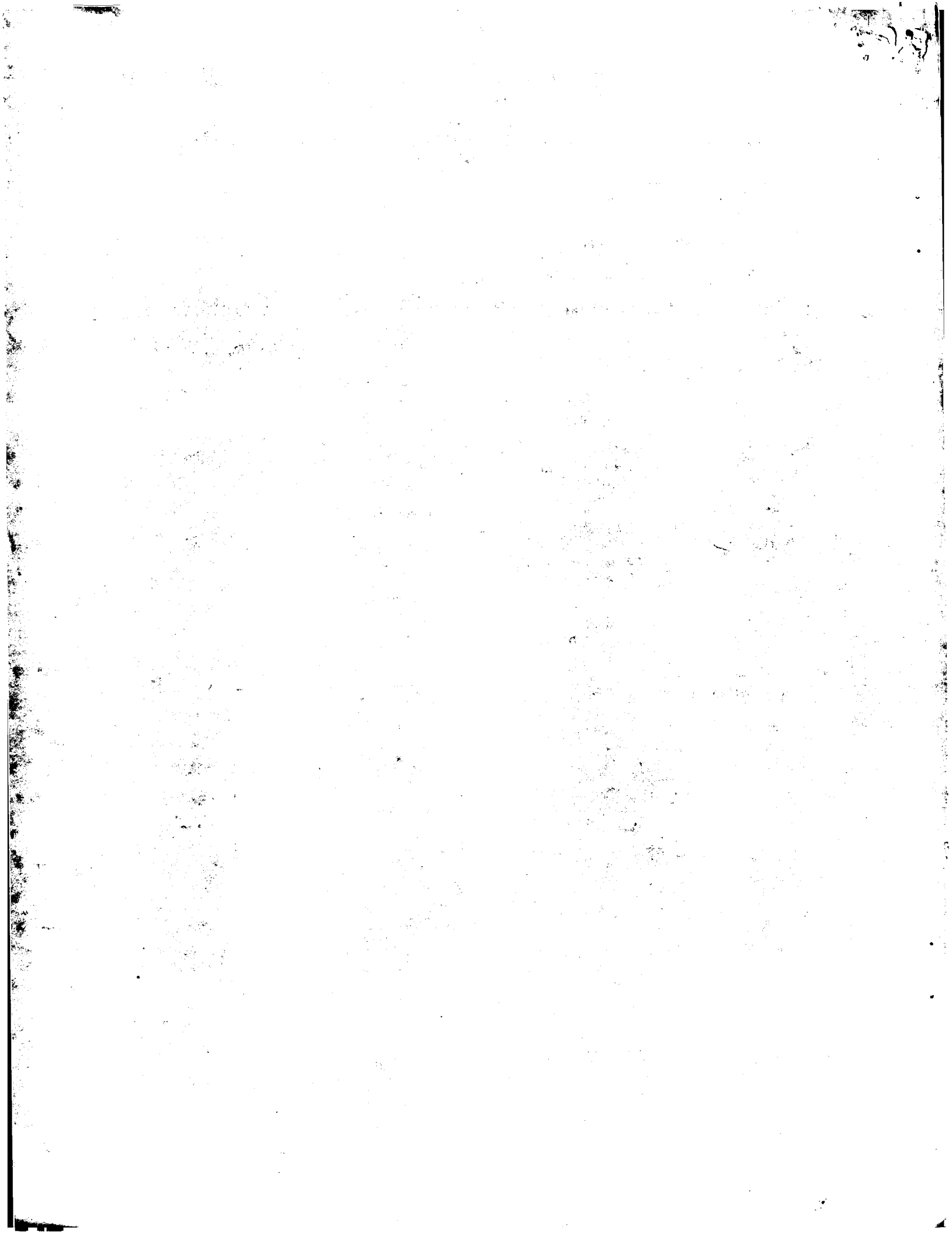
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(54) Title: HIGH-INTENSITY LIGHTING FIXTURE



(57) Abstract: A luminaire assembly (10) using a double-ended, unshielded high intensity discharge (HID) light source (100). In one aspect, the assembly (10) includes a light source mount (22) adapted to manually, without tools, mount and remove the HID light source (100). The light source mount (22) can optionally include structure (106L and R, 134L and R) to automatically position the light source (100) in a desired orientation. In another aspect, the assembly (10) includes a connection (104L and R, 304L and R, 306L and R) adapted to manually, without tools, connect the light source (100) to electrical power, the connection (104L and R, 304L and R, 306L and R) can be configured to have no electrically conducting surfaces directly exposed or accessible to human fingers and can be configured to be positioned relatively away from the light source (100). In another aspect, the assembly (10) can include an ignitor circuit for the light source (100) farther away from a ballast circuit for the light source (100) but closer to the light source (100). The ignitor circuit can be in a housing (16) that is mountable to the assembly (10).

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TITLE: HIGH-INTENSITY LIGHTING FIXTURE**BACKGROUND OF THE INVENTION*****Field of the Invention***

5

The present invention relates to high intensity lighting fixtures, and in particular, to unjacketed, double-ended high intensity discharge (HID) lamps and fixtures for wide area lighting of relatively distant targets, such as in sports lighting.

10 ***Problems in the Art***

High intensity discharge lamps, such as used in sports lighting, require high operating electrical power to operate lamps that usually are on the order of 1000 watts or greater. Also, HID lamps such as metal halide or mercury HID lamps generate ultraviolet (UV) radiation. Both of these characteristics of such HID lamps create safety issues, particularly for persons that install, maintain or repair such fixtures.

Some HID fixtures address these issues by utilizing screw-in lamps so that there are no directly exposed current-carrying parts. These lamps also usually have glass envelopes surrounding the arc tube. The glass absorbs a sufficient amount of UV radiation so that it does not pose a serious risk to workers, even if in close proximity to the lamps when operating.

A particular type of HID lamp does not have any glass envelope surrounding the arc tube. It also has opposite ends usually with short leads with exposed ends that are connected to exposed electrical connection posts in the fixture. Although such fixtures usually have glass lens over the front of the reflector for the fixture, which blocks UV radiation, when the lens is opened, that UV protection is removed. Also, the exposed current carrying surfaces pose risk.

Entities such as Underwriters Laboratories (UL) have standards for such fixtures (also sometimes called luminaires), which directly address the

safety concerns with high-powered electricity and UV radiation relative to double-ended unjacketed HID lamps. See, for example, UL standards 1598. Sections 3.4, 6.4, and 6.5 require each fixture to have safety interlock switches which automatically disconnect electrical power to the fixture when the lens assembly is removed. The automatic disconnection of power is not only intended to prevent any risk of electrical shock, even if normally current carrying exposed surfaces are touched, but also, is intended to prevent any risk of UV exposure.

The state of the art follows these standards by either jacketing HID lamps or utilizing some type of automatic power disconnect, usually by some type of switch or switches. Some embed electrically conducting wire or ribbon in the lens. If the lens is broken, the wire or ribbon is broken and causes an automatic disconnect of power to the fixture, or at least to the exposed current-carrying parts or surfaces.

The problems with these types of state of the art solutions include the risk of failure of the automatic switches. The environment of these switches, in fixtures operating at high power and putting out significant heat, can result in unreliability for the automatic power disconnect switches or other automatic power disconnect structure(s).

Also, such switch(es) and structure(s) add to the complexity and cost of such fixtures. They can also add to the difficulty in accessing, working on, and replacing or repairing parts in the fixture.

Many types of the state of the art fixtures require use of tools to install and remove the lamps or other parts. Many times these fixtures are elevated to substantial heights in the air (e.g. on poles 35 feet to over 100 feet tall) or in rafters or on other elevated structures. It is cumbersome and adds additional risk to the worker to have to handle tools as well as be careful about not dropping anything, avoiding electrical shock and avoiding burns.

Therefore, there is a real need in the art for improvement. It is therefore a principle object, feature, or advantage of the present invention to improve upon the state of the art.

SUMMARY OF THE INVENTION

The present invention includes a lighting fixture which improves upon the state of the art in at least the following ways.

5 It shields the lamp lead connections to electrical power from direct exposure to a worker by utilizing connections that even when separated, do not allow direct contact by even the fingers of a worker.

It associates a UV block with the arc tube so that even if a worker is exposed to the arc tube when the fixture lens is removed, UV attenuation
10 occurs at or near the arc lamp and UV radiation of a risky level is blocked from reaching the worker.

It does not require automatic power disconnect switches or other structure for automatic disconnect of power.

It provides easy and quick disconnection of power to the lamp, removal
15 and replacement of the lamp as well as other parts, all without tools.

It thus reduces the cost and complexity of such fixtures, and the risk of malfunction of some switch or other structure, while retaining safety standards.

These and other features, objects, or advantages of the invention will
20 become more apparent with reference to the other parts of this application and description and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Figures 1A-D, and 1F are assembled perspective views of an
25 embodiment according to the present invention. Figure 1E is an exploded view of those other Figures. In some circumstances, hidden lines are not used, but structure which would otherwise be hidden is indicated by solid lines.

Figures 2A-B are various plan and sectional views of component 12 (the cone or bulb cone or mounting mogul) of Figures 1A-F.

Figures 3A-C are plan views and details of reflector 18 of Figures 1A-F and a reinforcing ring 130 (see also Figure 6A) that can be used with reflector 18.

Figures 4A-I are isometric views of a box assembly 16 of Figures 1A-F
5 for an ignitor circuit.

Figures 5A-J are isometric views and details of an HID arc tube assembly 14 of Figures 1A-F.

Figures 6A1, 6A2, 6B-M are isometric views and details of lamp holder assembly 22 of Figures 1A-F.

10 Figures 7A-W are isometric and details of parabolic reflector assembly 16 of Figures 1A-F and how it mounts in reflector 18.

Figures 8A-D are isometric and details of connector assembly 28 of Figures 1A-F.

Figures 9A and B are exploded views of parts from Figures 1A-F.

15 Figure 9C is plan views of a firewall 120.

DETAILED DESCRIPTION OF AN EXEMPLARY EMBODIMENT

General Environment of One Embodiment

To achieve a better understanding of the invention, one embodiment will now be described and illustrated in detail. Frequent reference will be made to
20 the appended drawings. Reference numerals will be used to indicate certain parts and locations in the drawings. The same reference numbers will be used to indicate the same or similar parts and locations throughout the drawings, unless otherwise indicated.

The general environment of the embodiment described below will be
25 that of sports lighting. Examples include outdoor lighting of football, soccer, baseball, softball, and other sports fields where banks or arrays of HID fixtures are elevated from poles or structures (e.g. >35 feet tall). Examples also include indoor lighting where banks or arrays are suspended from rafters or beams or other structures.

Sports lighting of this type generally utilizes HID lamps of at or above 1000 watts rating. Reflectors are used to generate relatively narrow beams (especially in the vertical plane) that can be controlled and concentrated substantial distances (many times over a hundred feet) to a target area such as a playing field.

In this embodiment, unjacketed double-ended HID lamps of 2000 watt rating are used.

Detailed Description of One Embodiment

Fixture Generally

10

Figures 1A-F illustrate an exemplary embodiment of a fixture 10, according to the present invention. As shown in Figure 1, the major sections or parts of fixture 10 include a cone 12 enclosing a connector assembly 28 and providing a connection to an adjustable mounting elbow 14 on one end and a reflector /lens assembly 18/20 on the other. A box assembly 16 is mounted to cone 12 and houses an igniter. A lamp holder assembly 22 is connected to the base of reflector 18 and provides for snap-in and out of lamp assembly 24. A paraboloid assembly 26 is also removably mounted to the lamp holder assembly 22, and serves to reflect light energy from lamp 24, but is removably to allow access to cone 12 for installation and maintenance.

20

Figure 1A shows fixture 10 substantially assembled, but in a type of see-through illustration that shows how the interior parts are positioned. Figures 1B-1D are similar to Figure 1A, but in line drawing form.

25

Figure 1C illustrates in more detail how leads 102L (left) and 102R (right) are generally positioned in assembled form between lamp or arc tube 100 and connection assembly 28, which is in operative communication with an electrical power source (not shown).

30

Figure 1E illustrates the major parts of fixture 10 in exploded fashion. As can be appreciated, when installing fixture 10, connection assembly 28 is mounted inside cone 14, and reflector 18 to cone 14 by means known within

the art using the reinforcing ring shown at Figure 3C. Lamp holder 22 is also mounted to the reinforcing ring. Paraboloid reflector assembly 26 has mounting structure that allows it to be removably locked into a holding position in lamp holder assembly 22. Likewise lamp assembly 24 is removably mountable into
5 lamp holder assembly 22.

Thus, once assembled, to work on fixture 10, a worker can disconnect the finger safe connections 102L/R and 304L/R to disconnect electrical power to lamp 100. This can be done easily, without risk that even the workers fingers can contact live electrical surfaces. Finger safe connections are available
10 commercially. Those shown in the Figures are specially made to allow a worker to grip and manipulate them, and so that they can handle and have longevity in the environment of fixture 10 and the electrical power and heat experienced by it. An example of such finger safe connections can be found at co-pending U.S. Serial Number 09/076,278, commonly-owned by the owner of
15 this application, and incorporated by reference herein.

Cone

Cone 12 is shown and dimensioned at Figures 2A-B. It functions conventionally, except that ignitor box 16 is attachable as discussed below.

Elbow

Likewise, elbow 14 is substantially shown in detail at Figures 2A-B. It too functions conventionally.

Box Assembly

Box assembly 16 is shown in detail at Figs. 4A-I. Note particularly that it encloses and houses an igniter for fixture 10. But also, note that it does not have to include ballast for fixture 10. In this embodiment, ballast for fixture 10 is located remotely (e.g. down at the bottom of the pole elevating fixture 10).
25 This allows for much easier access to the ballasts and removes the ballast from the fixture, and its weight and bulk.
30

Box 16 is connected to cone 12 by screws, bolts, or other means (see through-channels in corners of box 16). An ignitor circuit (not shown), such as are known in the art therefore can be placed relatively closely to the arc lamp 100, but away from the heat generated interiorly of reflector 18. For this power rating of HID lamp, the ignitor is pulsing a very high voltage level (e.g. 5000 volts), but at relatively low amperage. Therefore, electrical power of this nature tends to dissipate over distance more quickly than if at higher amperage. Placing housing 16 close to lamp 100 reduces or eliminates this problem. It also allows the ballast(s) for lamp 100 to be placed at a different location. For example, the ballast(s) can be placed in an enclosure nearer the base of the pole. They are easier to reach and repair and this would reduce weight and wind load at the lighting fixture. An appropriate opening can be made in cone 12 to allow wiring or cables from an ignitor circuit in housing 16 to pass into cone 12.

Reflector and Lens Assembly

Reflector 18 and its reinforcing ring are shown at Figures 3A-C and function conventionally. The reflecting properties of reflector 18 can be selected according to need.

Lamp Assembly

By referring to Figures 5A-J, the HID arc lamp or tube 100 is illustrated in detail. It is a 2000 watt lamp, double-ended and unjacketed. Note that electrical leads 102L and R are completely covered along their lengths by an electrically insulating sleeving 103 (see Figure 5E), are electrically insulated at the ends of lamp 100 by ceramic or other insulating members and have finger-safe male connectors at opposite ends. Therefore, there are no electrically conducting surfaces that a worker can directly contact with his/her fingers.

Further note spring clamps 106L and R at opposite lamp ends which cooperate with lamp holder assembly 22 to essentially allow lamp assembly 24

to be snapped in and out, quickly and easily and without tools (see particularly Figure 5J).

The specific structure of finger safe connections 104 are shown at Figures 5F-H. The nature of these "finger-safe" connections is that they do not expose electrically conducting surfaces that can be contacted directly by human fingers. Thus, even if the connections are electrically live, they will not shock a human even if the human handles them with his/her hands. Further description of finger-safe connections is set forth in U.S. Serial Number 09/076,278, owned by the owner of the present application, and incorporated by reference herein.

As can be seen in the Figures, particularly Figures 1A, 1C, and 1E, connector assembly 28 mounts (by screws, bolts, or other means) into the interior of cone 12. As shown, see particularly Figures 8A-D, two male finger-safe connections 304L and R (left and right) can be integrally formed in a block that can be screwed, bolted or otherwise fixed to a plate or base of assembly 28. Each male connection 304 is raised from the plate or base, is rectangular or square in cross-section, and has raised tabs basically centered on three or all of its sides, and have distal ends that point generally in parallel towards the opening in cone 12 to reflector 18. Electrical leads from an electrical power source enter the opposite ends of connections 304, are fixed therein, and have exposed conducting surfaces internally of connections 304.

Figures 5A-J illustrate in detail complementary mating finger-safe female connections 104L and R having proximal ends connected to electrical leads 102L and R to opposite ends of arc tube 100. Connection 104 are identical and each has a distal end that matingly slides over a corresponding distal end of a connection 304. Note that the distal ends of connections 104L and R have medial axial slots on two opposite sides that extend from distal-most open ends a distance inwardly and then stop, and have holes on the other two opposite sides. These slots and holes align with the raised tabs on the exterior surfaces of the sides of connections 304 such that when connections 104 are first brought over connections 304, the shape of the connections help

guide them together, and then, the raised tabs of 304 enter and slide in the slots of 104 until the other raised tabs of 304 reach the holes in two sides of 104. Those raised tabs enter the holes and basically snap in place and lock connections 104 and 304 together, resisting axial separation. Connections 104 have internally exposed, but finger-safe conduction surfaces that are configured to frictionally engage or contact exposed conducting surfaces internal of 304 to create an electrical connection through each mated set 104R/304L and 104L/304R.

Note also that guides or tunnels 306L and R are aligned with the longitudinal axes of 304L and R respectively, are fixed to the plate or base of assembly 28, and are configured to allow passage of a connection 104, but closely conforms to the exterior shape of connection 104. Thus, guides 306 force the distal ends of 104 to be aligned with the distal ends of 304 when they come into close proximity, to ensure 104 is correctly oriented for mating with 304. None of the surfaces or pieces have electrically conducting surfaces accessible to human fingers.

Note that connections 104 are quite elongated. This allows the proximal ends of 104 (those nearest to the opening between cone 12 and reflector 18, to be close to that opening for easier access and gripping by a worker, but also allows the actual electrical junction between connectors 104 and 304 to be farther away from that opening; and thus farther away from heat generated inside reflector 18 during operation of lamp 100, some of which is conducted to the exterior of reflector 18 and cone 12. This is beneficial to deter or reduce any effect of such significant heat on these connections.

Figures 5H and I illustrate in detail structure associated with lamp 100. In particular in Figure 5H, lamp 100 can include a coating 110 all around lamp 100 that blocks and/or absorbs UV radiation generated in lamp 100. Such coatings are available from commercial entities, as indicated in Figure 5H. Coatings to block UV radiation are also disclosed in commonly owned U.S. Serial Number 09/076,277, incorporated by reference herein. Such coatings do not allow any more UV radiation from lamp 100 than glass lenses do in

conventional fixtures. They are also formulated to adhere to lamp 100 and remain for a useful life even in the high temperatures created by HID lamps. Additionally, lamp 100 could also have another coating 112 on or near a portion of its body. Here coating 112 is a reflective coating that, when lamp 100 is installed, is positioned on the outer facing side of lamp 100. It reflects or returns light that otherwise would travel directly out fixture 10 through lamp 100 and to reflectors 18 and/or 26. This light energy can then be collected and directed by those reflectors. Reflective coating 112 therefore can assist in diminishing glare that otherwise might be caused by light emanating directly out of fixture 10 without being controlled by any reflector.

It is believed that use of UV coating 110 and/or reflective coating 112, and the resulting redirection of light energy back through lamp 100 may increase lamp life for lamp 100. It is believed that the reason is that there is a more uniform heating of the arc generated by the HID lamp.

Other details of lamp 100 in this embodiment are shown at Figures 5A-J. An automatic location structure can be built in so that reflective coating 112 always ends up in the proper position.

One way to accomplish this is to utilize the spring clips 106L and R shown in detail in Figures 5A and J, for example. They are clamped to opposite ends of lamp 100 (other means or methods may be used to hold them in position once installed). Figure 5B and C show the clips in relation to arc tube 100, and in particular to the optional reflector 112. Figure 6a then shows in more detail receivers 134L and R at the distal ends of outwardly extending arms 132L and R connected to ring 130, all of which forms lamp holder assembly 22. Receivers 134 are u-shaped and have holes on opposite sides of the u-shape aligned along an transverse axis. Clips 106 have shoulders on opposite sides configured to snap into place in holes in receivers 134 when lamp 100 is brought into place in holder assembly 22. Clips 106 fixed in a predetermined way to lamp 100 such that when the shoulders enter the holes in receivers 134, the correct rotational position of lamp 100 is automatically assured. Thus, the worker that is installing or relamping the lighting fixture

can do so without tools, and having rotational position of lamp 100, and for example reflector 112, automatic.

To remove lamp 100, simply, quickly and manually without tools, one simply grabs the outward extended ends of spring clips 106, and squeeze them
5 together to release the shoulders of clips 106 from the holes in receivers 134.

Lamp Holder Assembly

Figures 6A-M detail lamp holder assembly 22. Note particularly how lamp brackets 132 extend outwardly angularly from ring 130 to lamp holders
10 134, which have rectangular openings to receive the spring clamp and releasably seat lamp 100 in place. Wire clips 136 allow leads 102 to be removably secured along brackets 132.

Parabloid Assembly

Figures 7A-W detail an embodiment of parabloid reflector 200. Vertical
15 and horizontal brackets 202 and 204 cooperate with clamps 206 to grasp reflector 200. This structure insulates this glass reflector from metal to reduce the potential for breakage. Ceramic blankets can be placed on the back of reflector 200 to help insulate the interior of cone 12 from heat. Also, a firewall
20 210 can be mounted as shown. Assembly 26 along with spring clips 208 (see Figures 7M-O, allow reflector 200 to be quickly and easily installed and removed, without tools.

Fixture Connector Assembly

Lamp leads 102L and R are connectable and disconnectable to electrical
25 power by releasable connection to the finger safe receivers 304L and R mounted on bracket 300 which in turn is mountable in the interior of cone 12 (see Figures 8A-D). Wires 302L and R are directed for connection to an electrical power source.

Note guide 306 that assists a worker to line up and insert lead
30 connections 102L and R into fixed connections 304L and R on bracket 300.

Miscellaneous

Figures 9A and C illustrate in exploded or isolated fashion certain of the parts discussed above.

5 Fixture or luminaire assembly 10 is assembled by installing connection assembly 28 into cone 12, and wiring electrical power leads to connections 304. Ignitor box 16 and its ignitor circuit are attached and connected electrically.

10 Lamp holder assembly 22 is mounted around the opening in the apex of reflector 18. Lamp 100 is snapped into assembly 22. Finger-safe connections 104 are manipulated into guides 306 and snapped over finger-safe connections 304. Parabolic reflector 26 is placed into position closing off the opening between reflector 18 and cone 12. Lens 20 is fixed in place by lens clips.

15 The assembly is finger-safe, even with power on, there is no UV threat because of the UV attenuation coating of lamp 100, the ignitor is in close proximity. Hooking up connections 104 and 304, installing parabolic reflector 28, mounting lamp 100 all are possible without tools and solely with a worker's hands.

20 Access to connections 104 and 304 is just the reverse. The lens is opened. A cable (Figure 7V) could be fixed between the lens and the reflector to prevent it from falling to the ground. Parabolic reflector 26 can be manually removed (a cable could also be connected between it and the fixture). The worker need only pull axially outward gently but with enough force to overcome the capture of the raised tabs of 304 in the openings of 104, to separate connections 104 and 304 and cut off electrical power to lamp 100.

25 This is efficient and economical and reliable. One can relamp quickly and easily.

30 It is noted that reflector 112 sends light that otherwise would leave lamp 100 back into lamp 100. It is believed that this might increase lamp life or lumen maintenance. It is believed that this promotes isothermal conditions in the arc tube 100.

Options and Alternatives

It is to be understood and appreciated that the above embodiment is given by way of example only, and not by way of limitation to the invention.

- 5 The invention can take many forms and embodiments. Variations obvious to one skilled in the art will be included within the invention.

For example, the reflective coating 112 is not required. It can be used when desired. It could also be a separate piece held near lamp 100.

10

CLAIMS

What is claimed is:

1. A luminaire assembly comprising:
 - 5 a. A bulb cone;
 - b. A mounting connection adapted to mount the bulb cone to a support;
 - c. A reflector having a portion adapted for connection to the bulb cone and an opening adapted to be covered by a lens;
 - 10 d. A mount for a double-ended unjacketed HID light source, the mount adapted to be positioned interiorly of the reflector and including a member adapted to removably receive and hold a double-ended HID light source; and
 - e. An electrical power connection adapted for connection to a source of electrical power.
- 15 2. The luminaire assembly of claim 1 wherein the bulb cone includes an interior chamber in which is positioned a frame, the frame including a receiver adapted to fixedly hold a first finger-safe electrical connection and a guide adapted to guide a complementary second finger-safe connection into operative
20 but manually releasable engagement with the second finger-safe connection.
3. The apparatus of claim 2 further comprising another receiver and guide adapted for a second set of first and second finger-safe connections.
- 25 4. The apparatus of claim 2 wherein the second finger-safe connection has an elongated insulated body.
5. The apparatus of claim 2 wherein the first finger-safe connection is positioned in the interior of the bulb cone and the second finger-safe
30 connection, when engaged with the first finger-safe connection, extends towards the reflector.

6. The apparatus of claim 5 further comprising a removable portion of the reflector at the portion attached to the bulb cone to gain access to the finger-safe connections.

5 7. The luminaire assembly of claim 1 wherein said mount for said HID source comprises first and second spaced apart receivers, one for each of said double ends of the HID source; each receiver connected to an arm extending to a portion adapted for mounting to either the reflector or the bulb cone, such that the receivers are positioned to hold an HID source in a desired position
10 interiorly of the reflector.

8. The luminaire assembly of claim 7 further comprising manually releasably members on one of the receivers or the HID light source adapted to releasably lock the HID source into the receivers.

15 9. The luminaire assembly of claim 8 wherein the manually releasable members comprise resilient devices that engage and lock into complementary structure in the receivers.

20 10. The luminaire assembly of claim 9 wherein the manually releasable members comprise spring clips attached to ends of the HID source, the spring clips in a normal state being expanded in at least one direction, and having manually manipulatable portions allowing retraction in said at least one direction.

25 11. The luminaire assembly of claim 8 further comprising structure to orient said HID source in a desired rotation orientation relative to a longitudinal axis of an HID source when mounted.

12. The luminaire assembly of claim 11 further comprising a reflective member on a portion of an HID source, the reflective member positioned to redirect light energy from the source interiorly of the source.

5 13. The luminaire assembly of claim 1 further comprising an ignitor circuit for the HID source, the ignitor circuit adapted to be segregated from a ballast circuit for the HID source, the ignitor circuit being closer to the HID source than to the ballast circuit.

10 14. The luminaire assembly of claim 13 further comprising a housing for the ignitor circuit adapted to be mounted on or adjacent to the luminaire assembly.

15 15. The luminaire assembly of claim 14 wherein the ignitor circuit housing is adapted to be mounted to the bulb cone of the luminaire assembly.

16. The luminaire assembly of claim 1 further comprising a UV attenuation applied to the HID source.

20 17. The luminaire assembly of claim 16 wherein the UV attenuation substantially attenuates UV radiation from any part of the HID source.

18. The luminaire assembly of claim 1 wherein the HID source is an arc tube having about 1000 watts or more rating.

25

19. The luminaire assembly of claim 1 where there is no exposed electrically conducting surface from the HID source to a connection to a source of electrical power when the electrical circuit is connected.

20. The luminaire assembly of claim 19 where there is no electrically conducting surface that can be accessed by human fingers when connections to electrical power at the luminaire assembly are disconnected.

5 21. A method of generating light from a luminaire assembly according to claim 1 having an HID light source comprising: positioning an HID light source in the form of an arc tube in a reflector; redirecting light from a portion of the HID light source that otherwise would leave the arc tube back towards a portion of the arc tube.

10

22. The method of claim 21 wherein the light is redirected in a manner to encourage isothermal conditions in the arc tube.

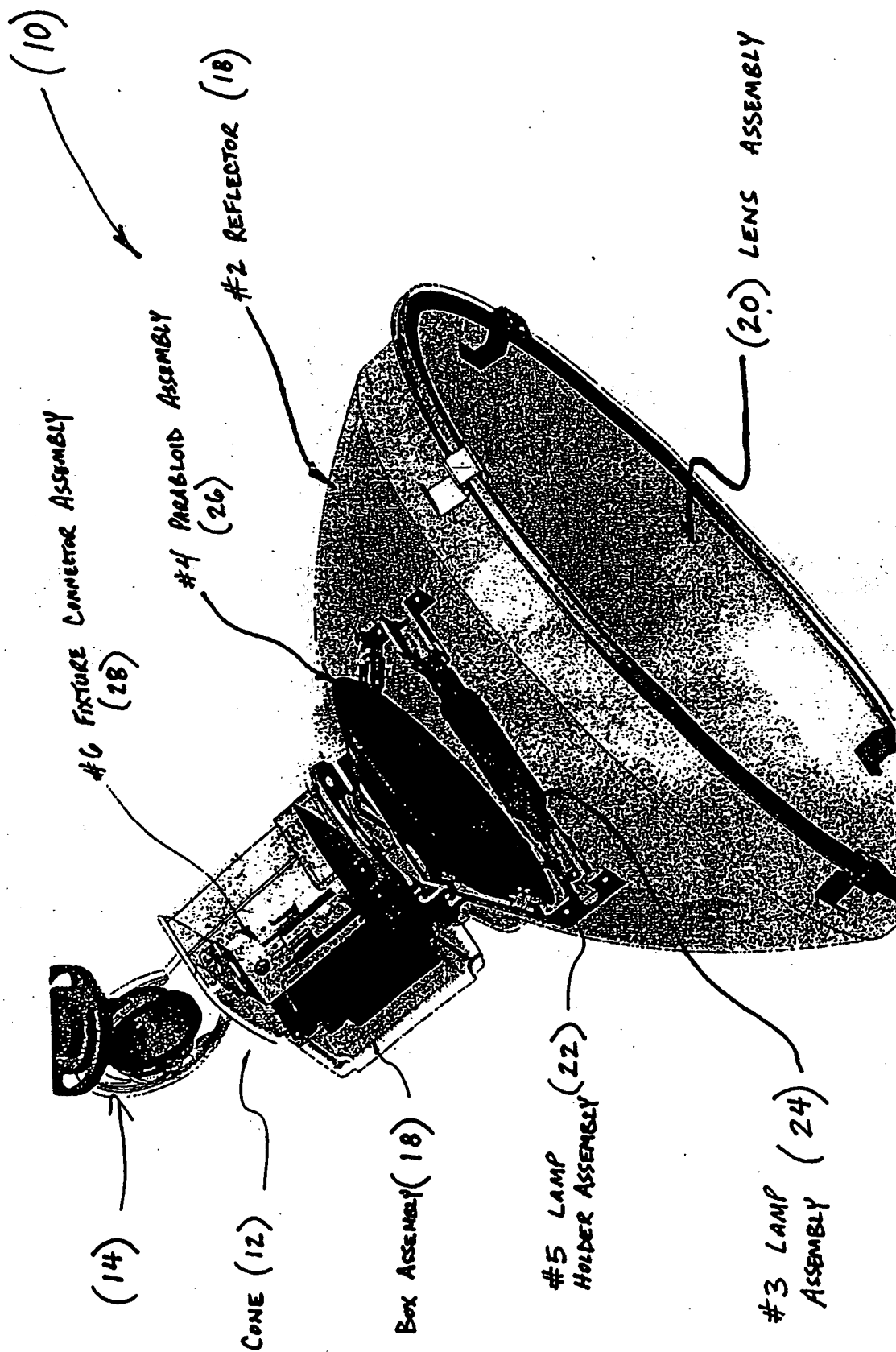
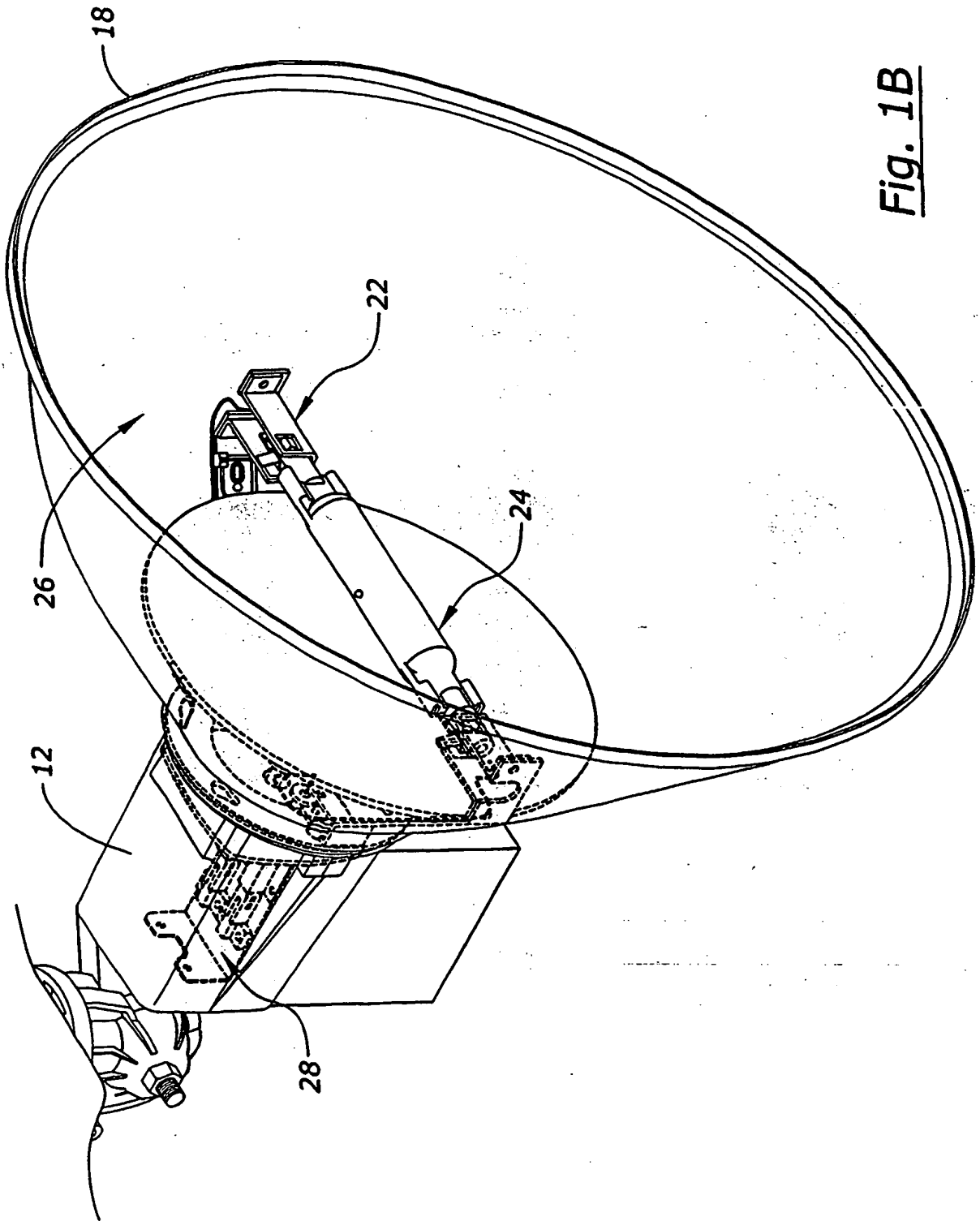
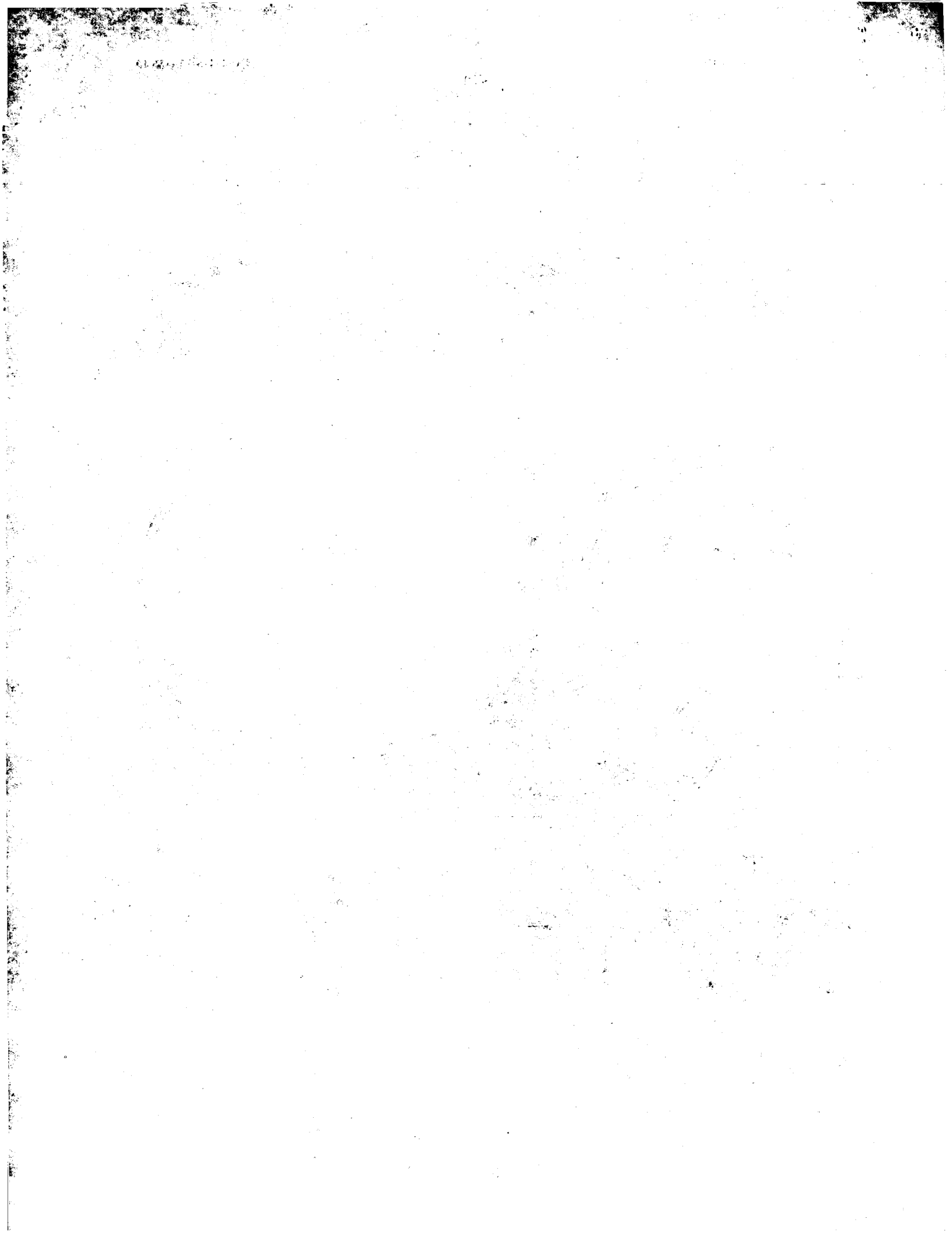


FIG. 1A

Fig. 1B



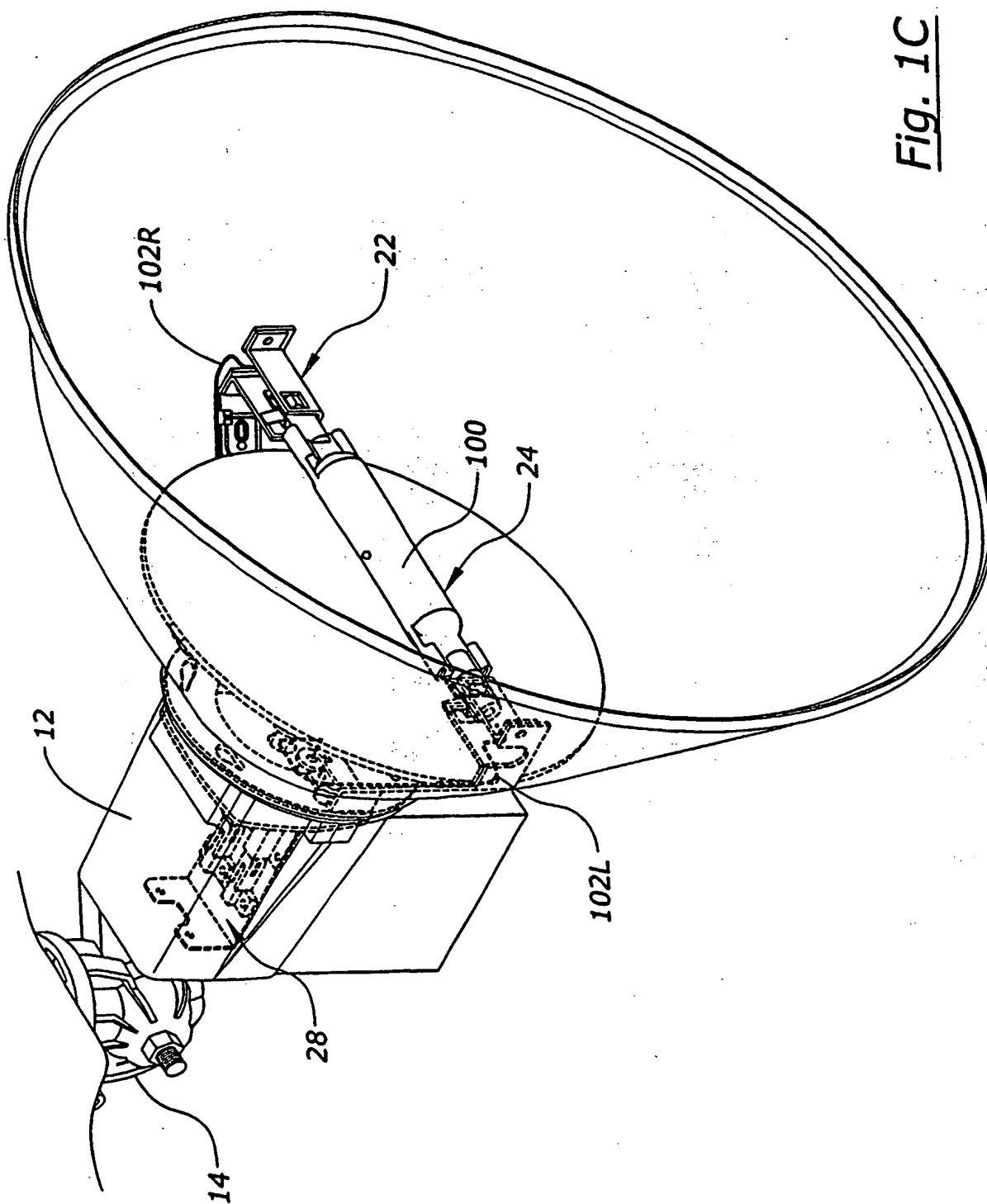
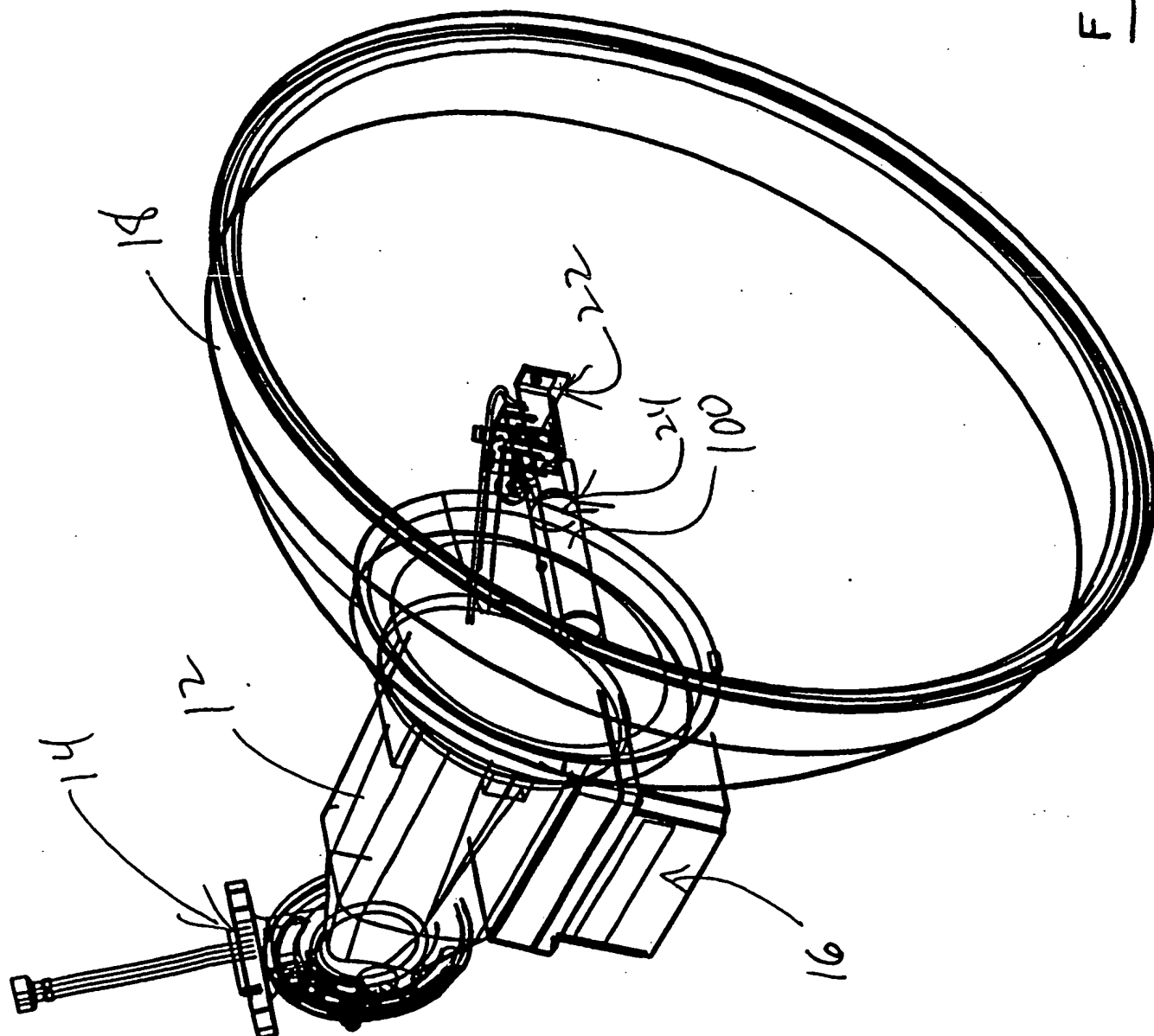
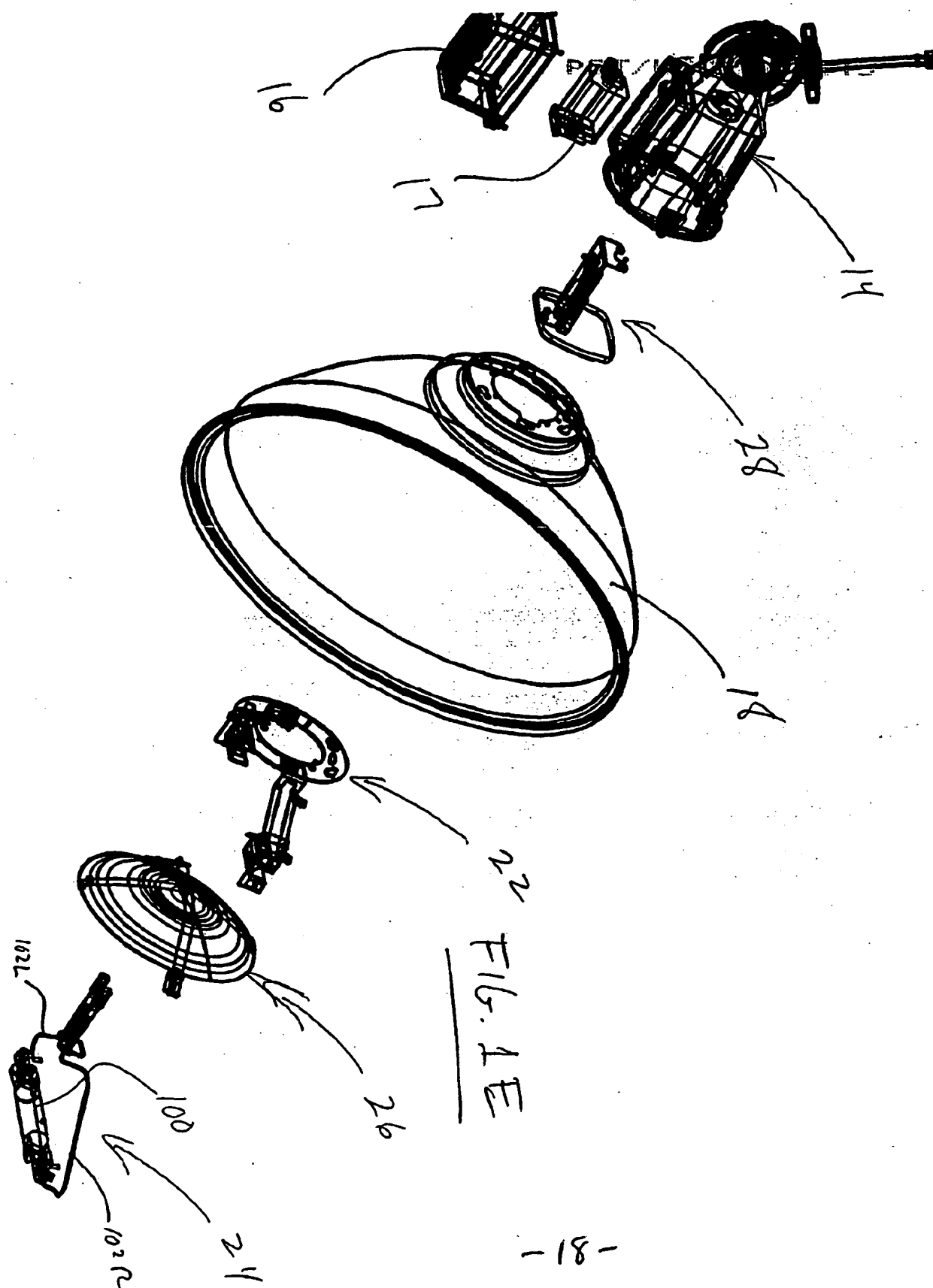
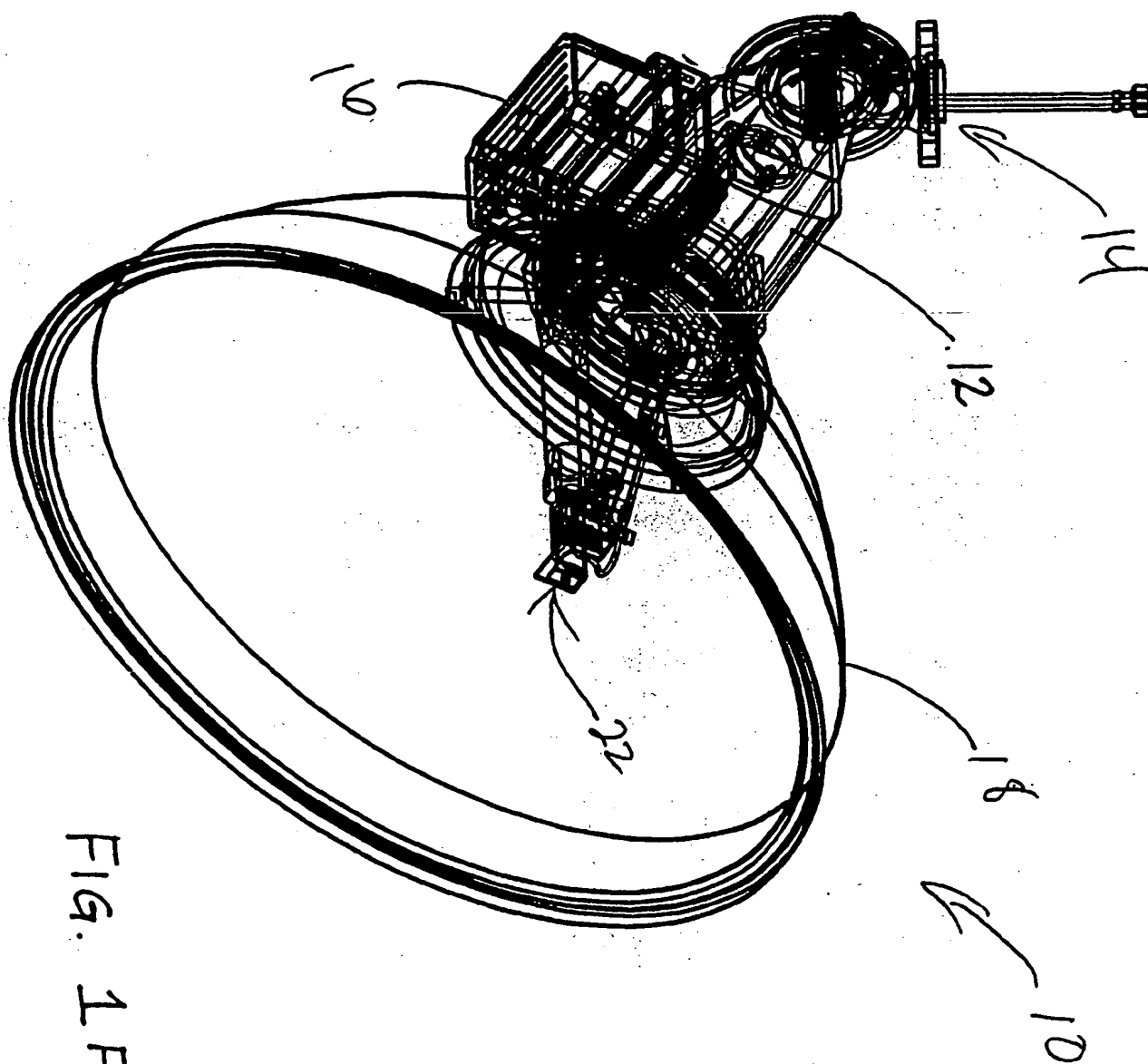
Fig. 1C

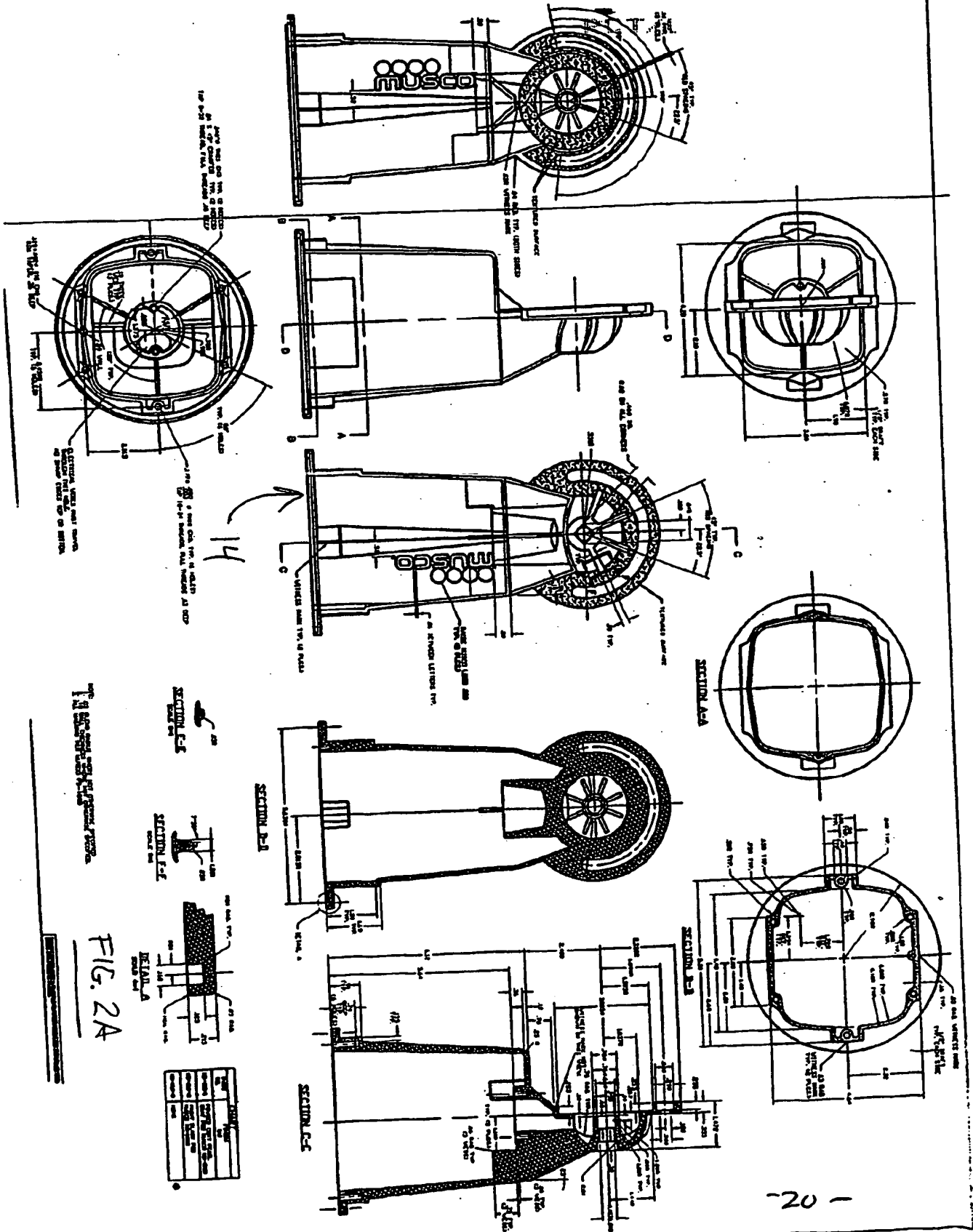
FIG. 1D



5/70







NOTE:
1. ALL WELDING PER MUSCO PS-1148.

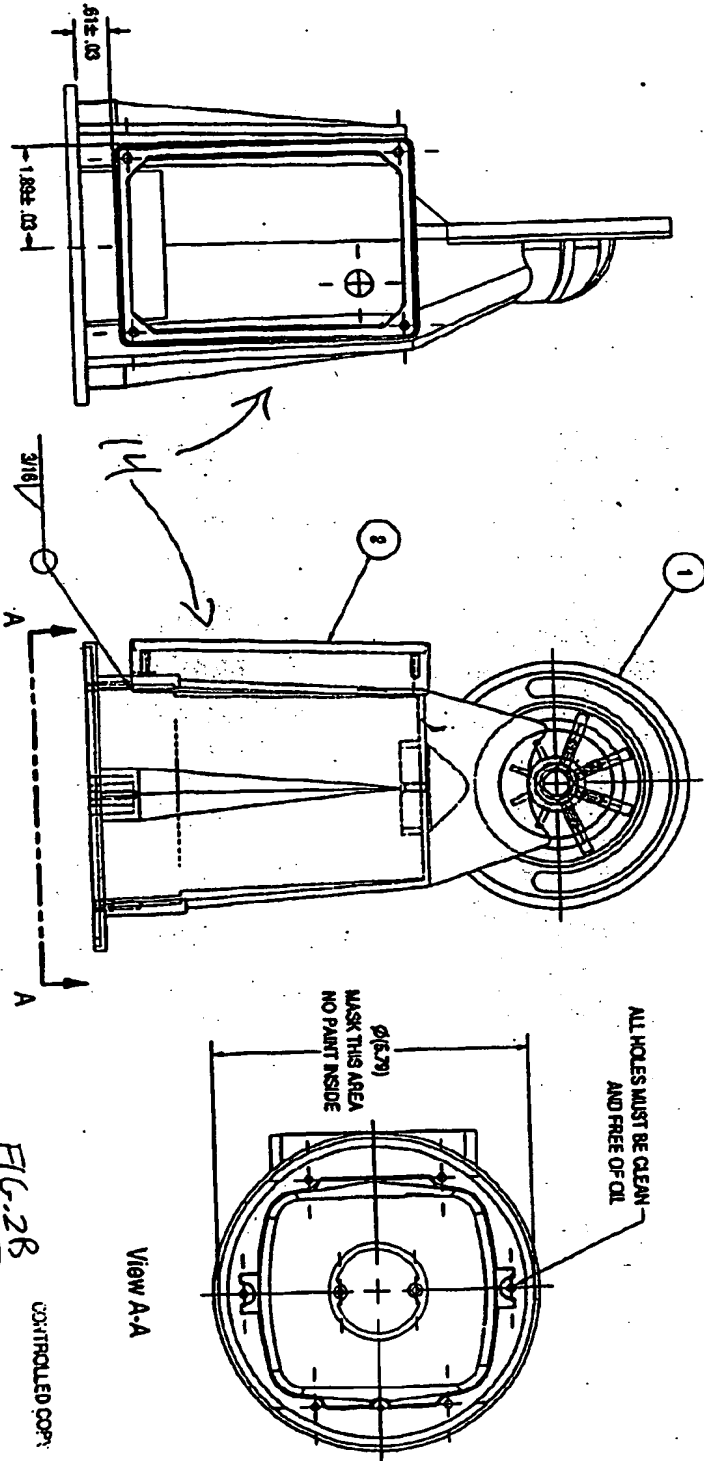


FIG. 2B

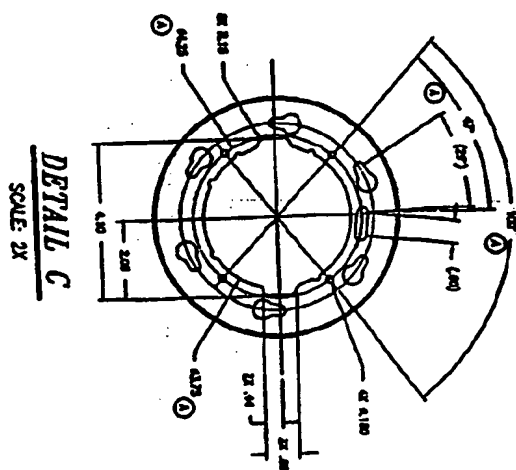
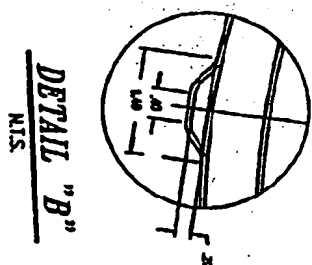
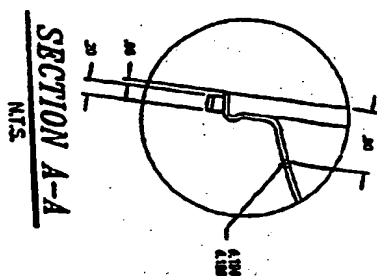
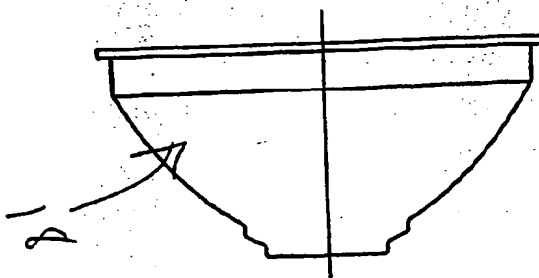
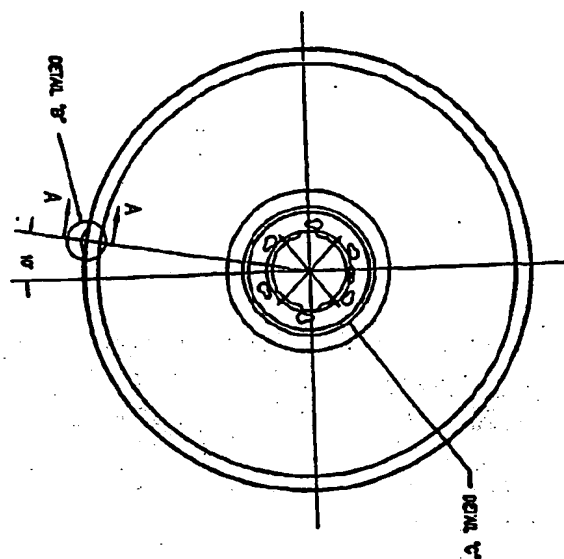
CONTROLLED COPY

PART		BILL OF MATERIALS PER UNIT	
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	2K Lampcase	
2	1	Igniter Box 2K	

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FORM 11-6445
UNCLASSIFIED
EXCLUDED FROM AUTOMATIC
DOWNGRADING AND
DECLASSIFICATION


TITLE: Lampcase Weldment - 2K

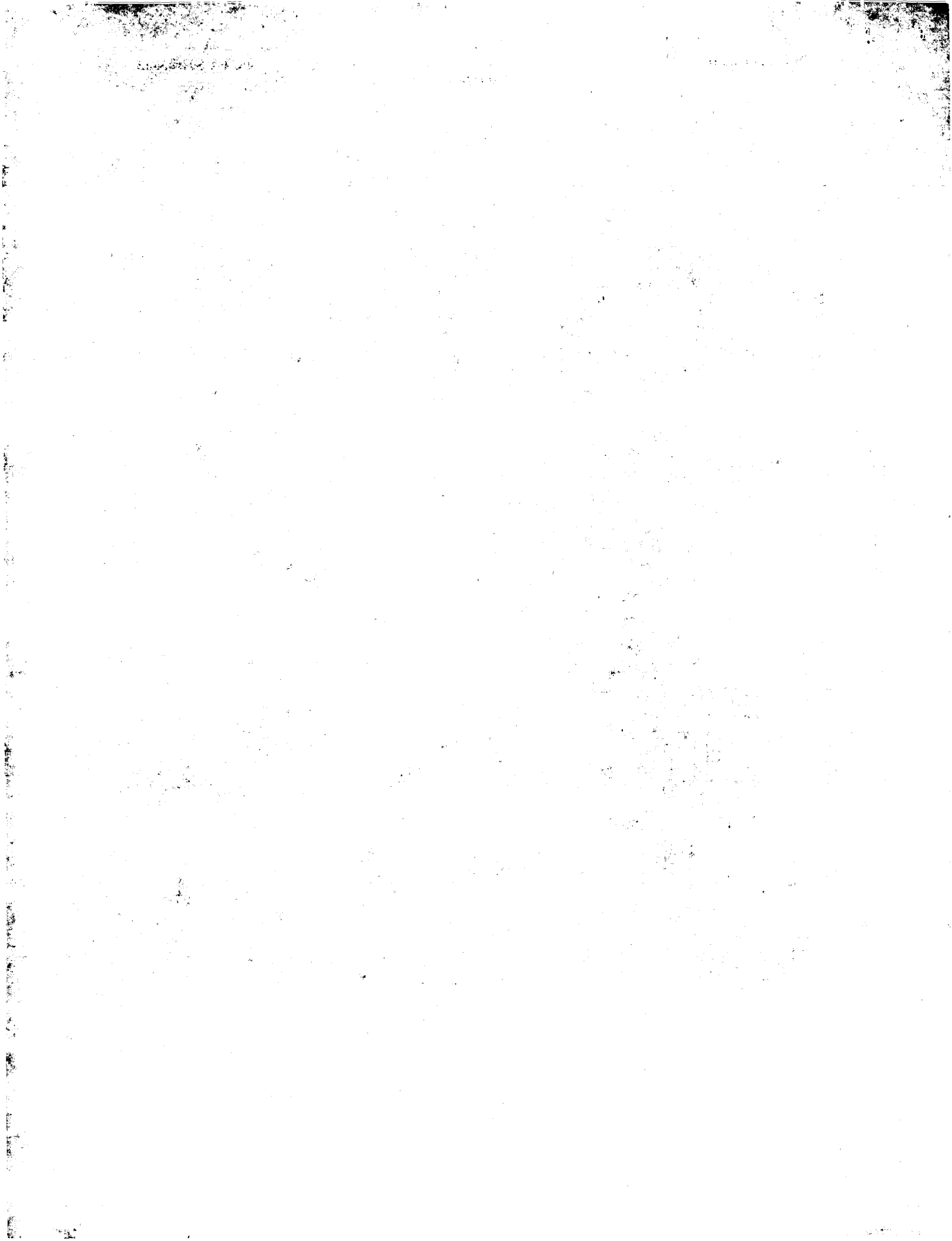


- 22 -

FILED

NOTE
1. ABOVE ALL SURFS FROM ALL DECS AND SWAP CORREDS AT 101.

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- NOTE:
1. REMOVE ALL BURRS, BREAK ALL EDGES AND SHARP CORNERS .01 MIN.
 2. FINISH: ANODIZE PER MIL SPEC MIL-A-8625F.
 3. TYPE II, CLASS 1, CLEAR, LIGHT ETCH.
 4. PARTS TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT.

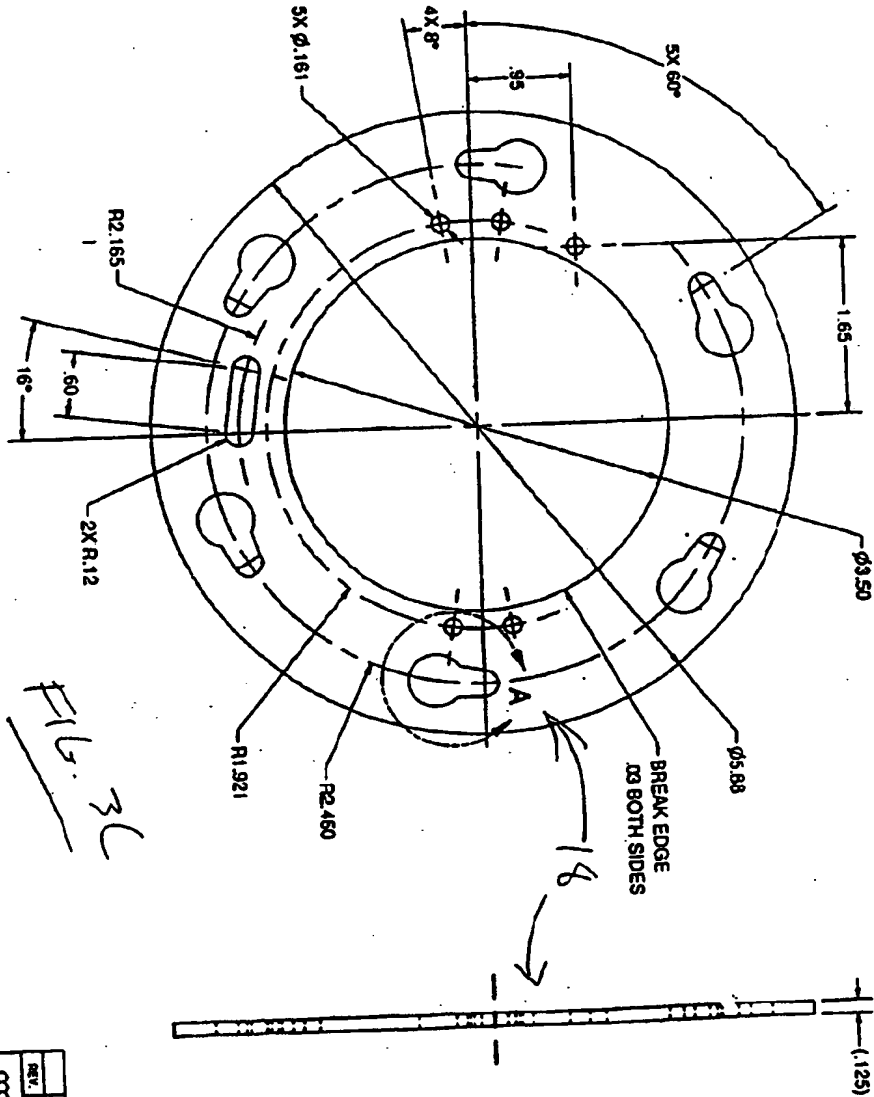
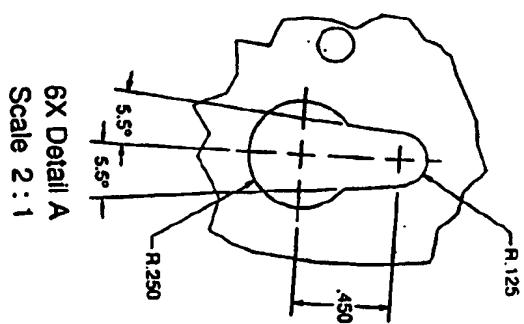
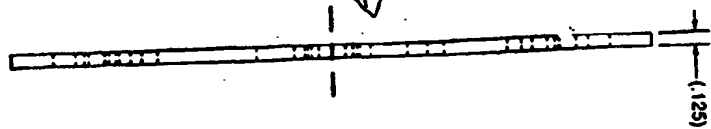


Fig. 3C



6X Detail A
Scale 2:1

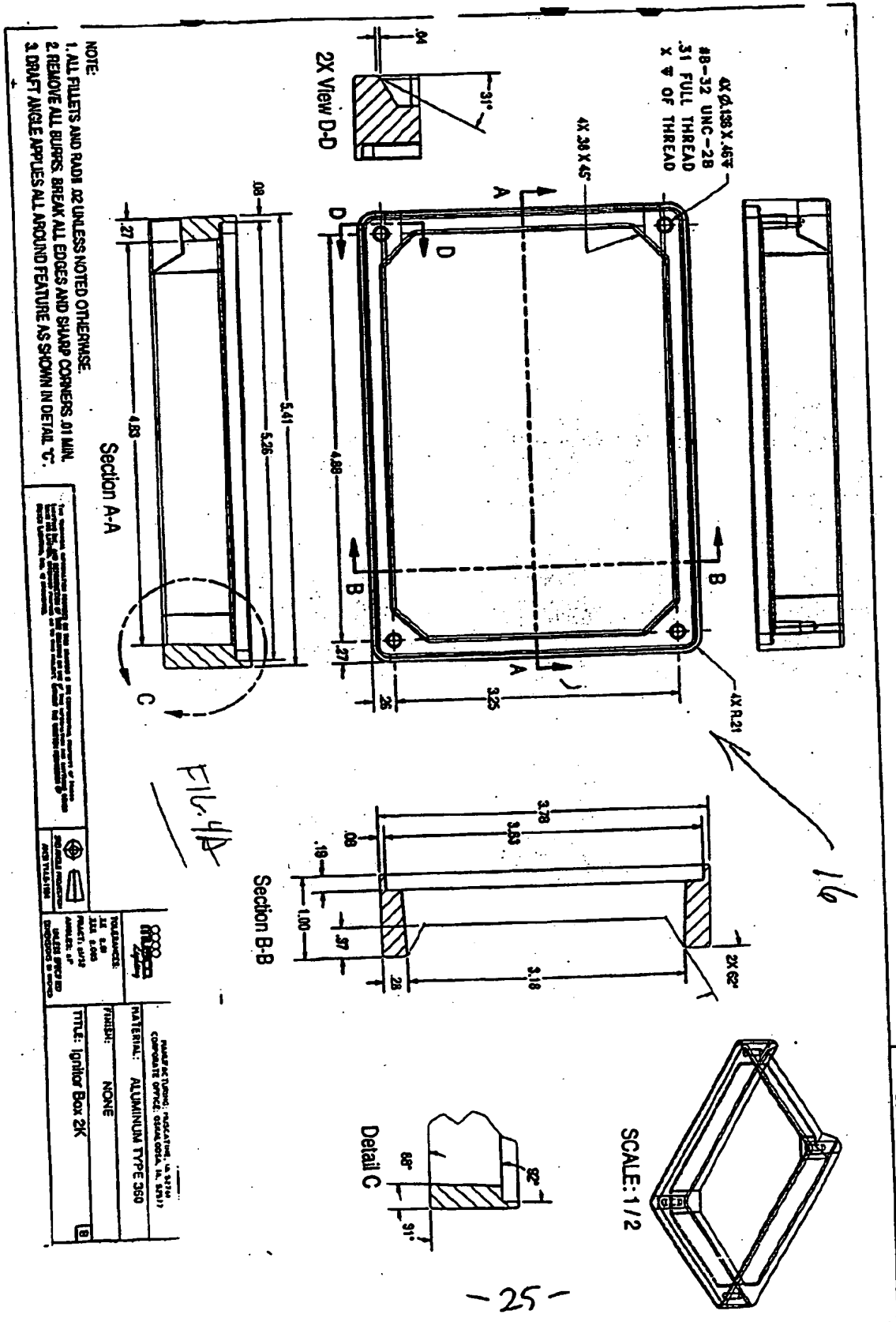
PART NO.
LS-3430-1

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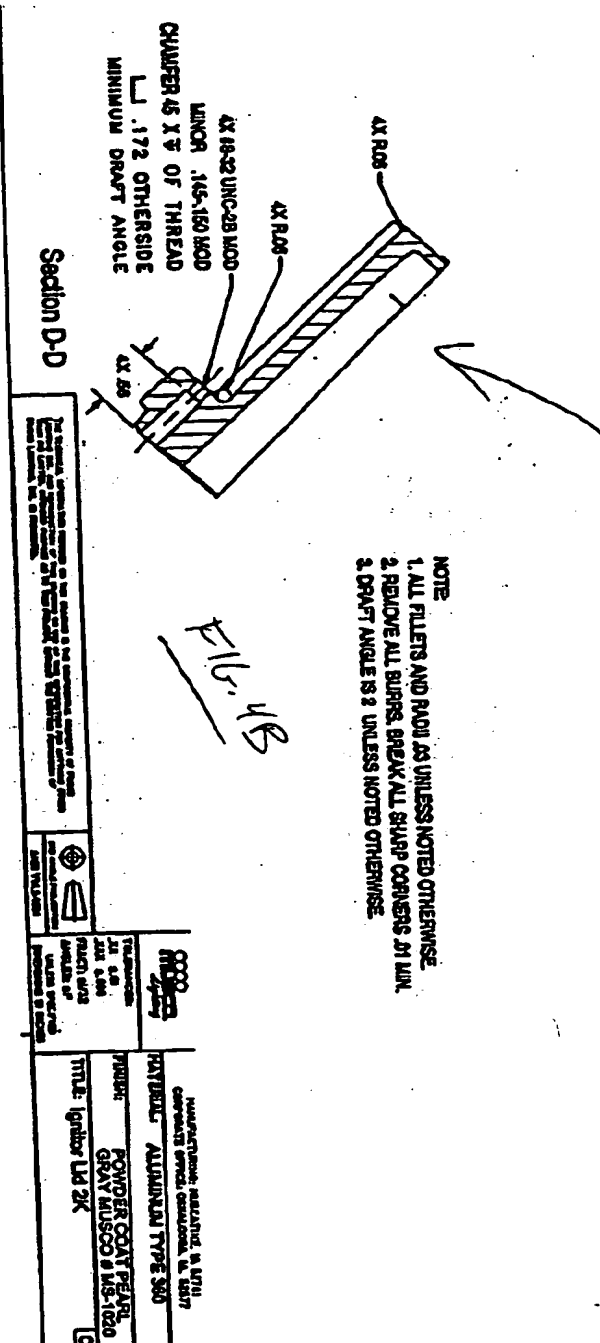


REV.	DESCRIPTION	DATE	CHK
1	REINFORCING RING	11/70	CH
MATERIAL: 125 THK ALUMINUM			
FINISH: SEE NOTES			
TITLE: REINFORCING RING			





PART NO.
LS-3510-1



13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

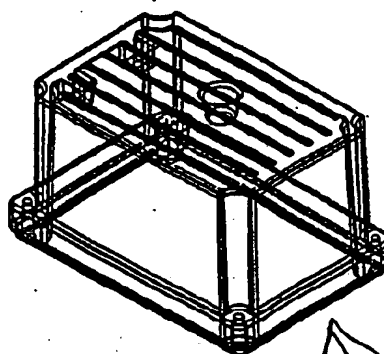


FIG. 4C

SCALE: 1/2

16

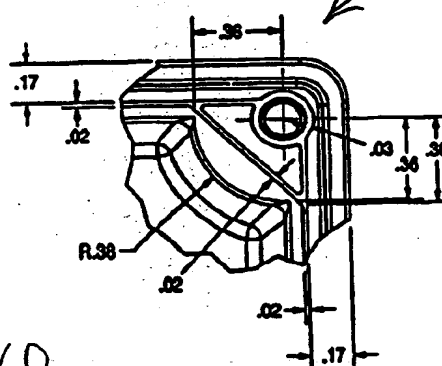
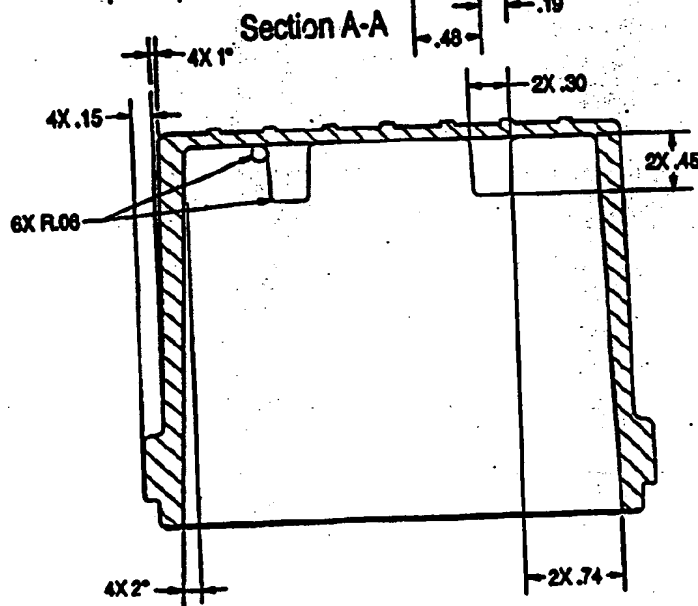
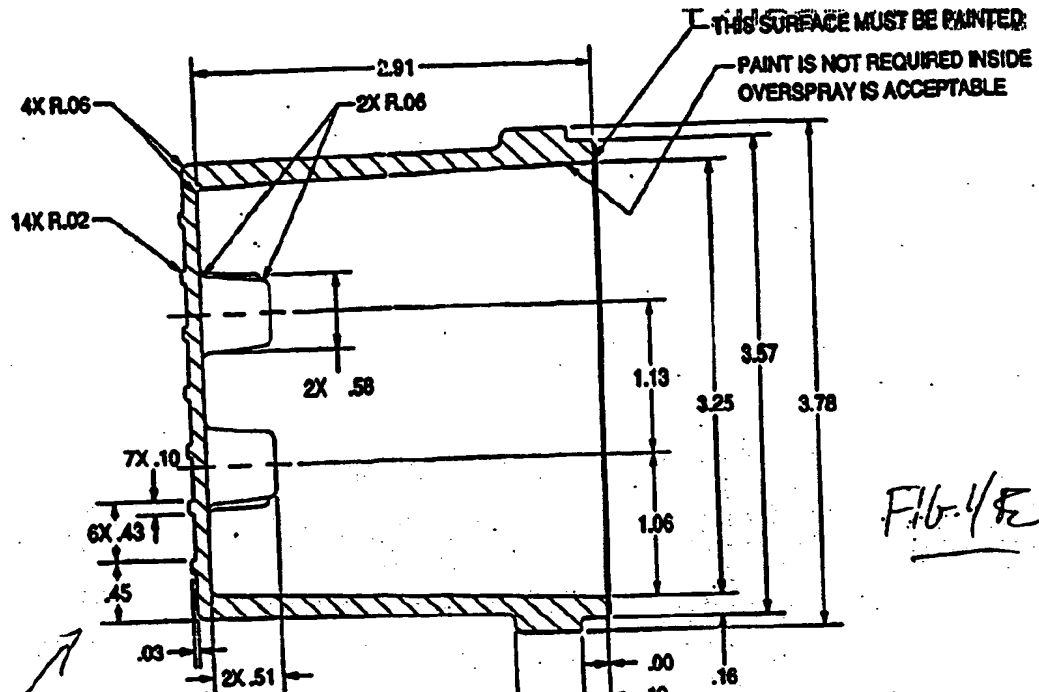


FIG. 4D

4X Detail C
Scale 2:1



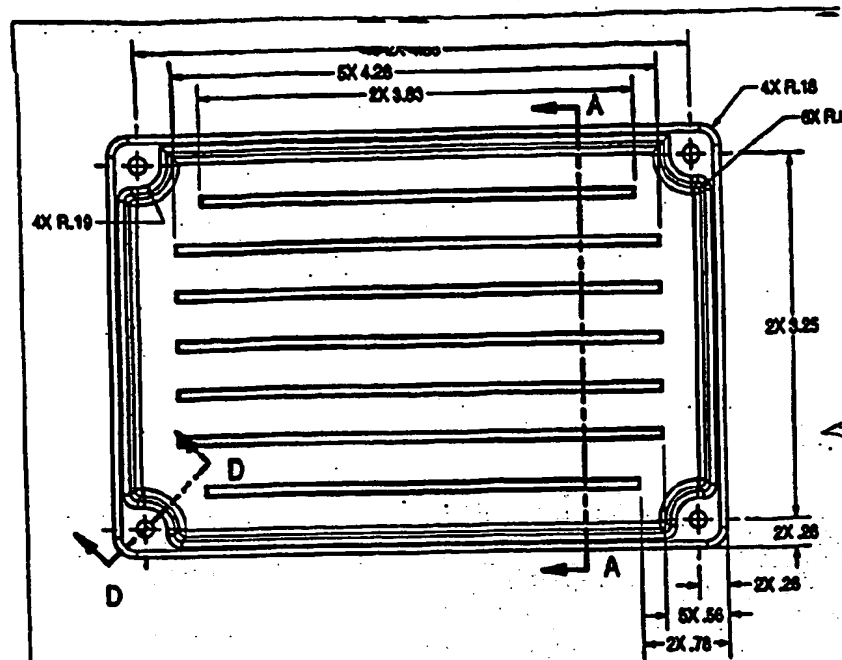


FIG. 4G

16

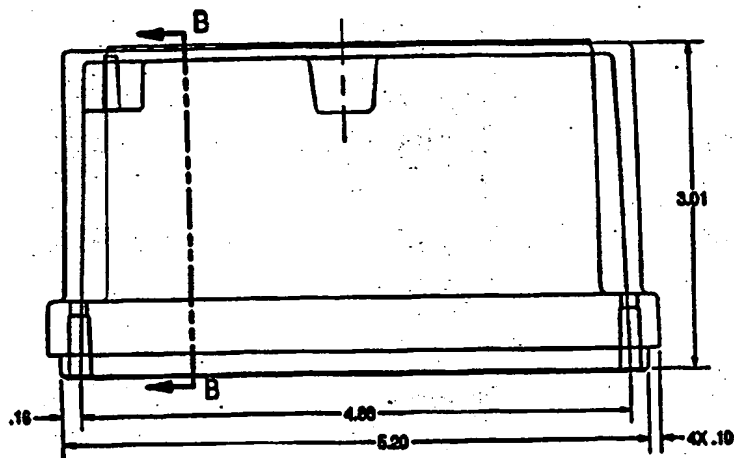


FIG. 4H

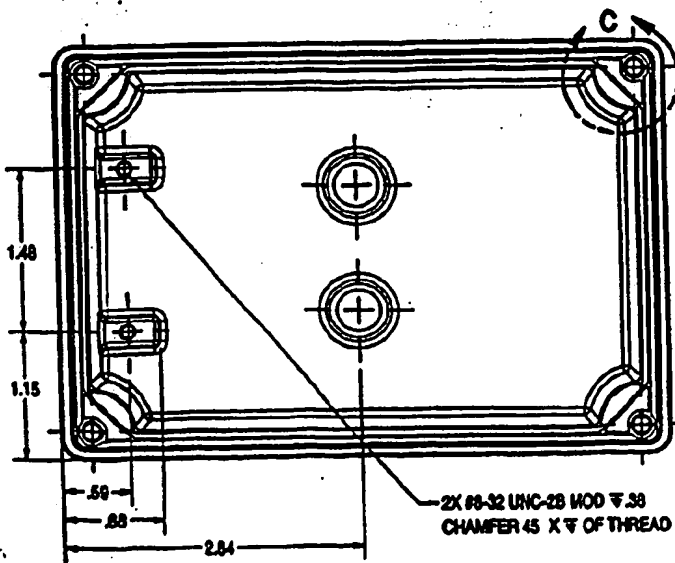
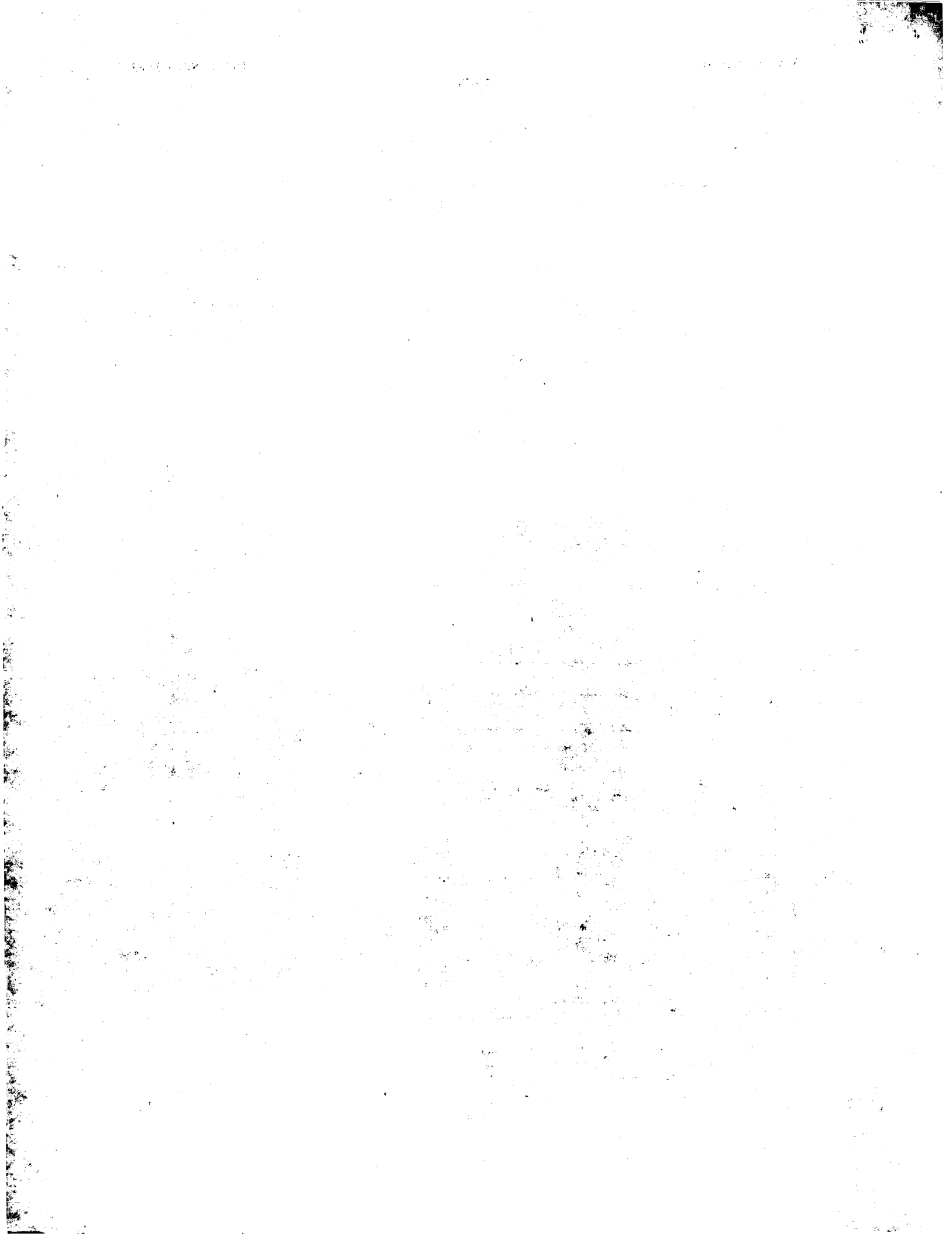
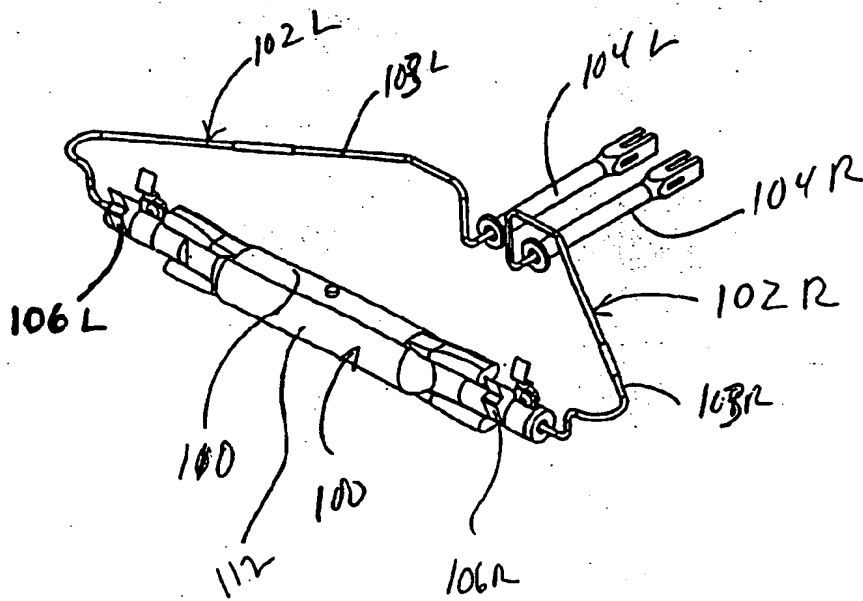
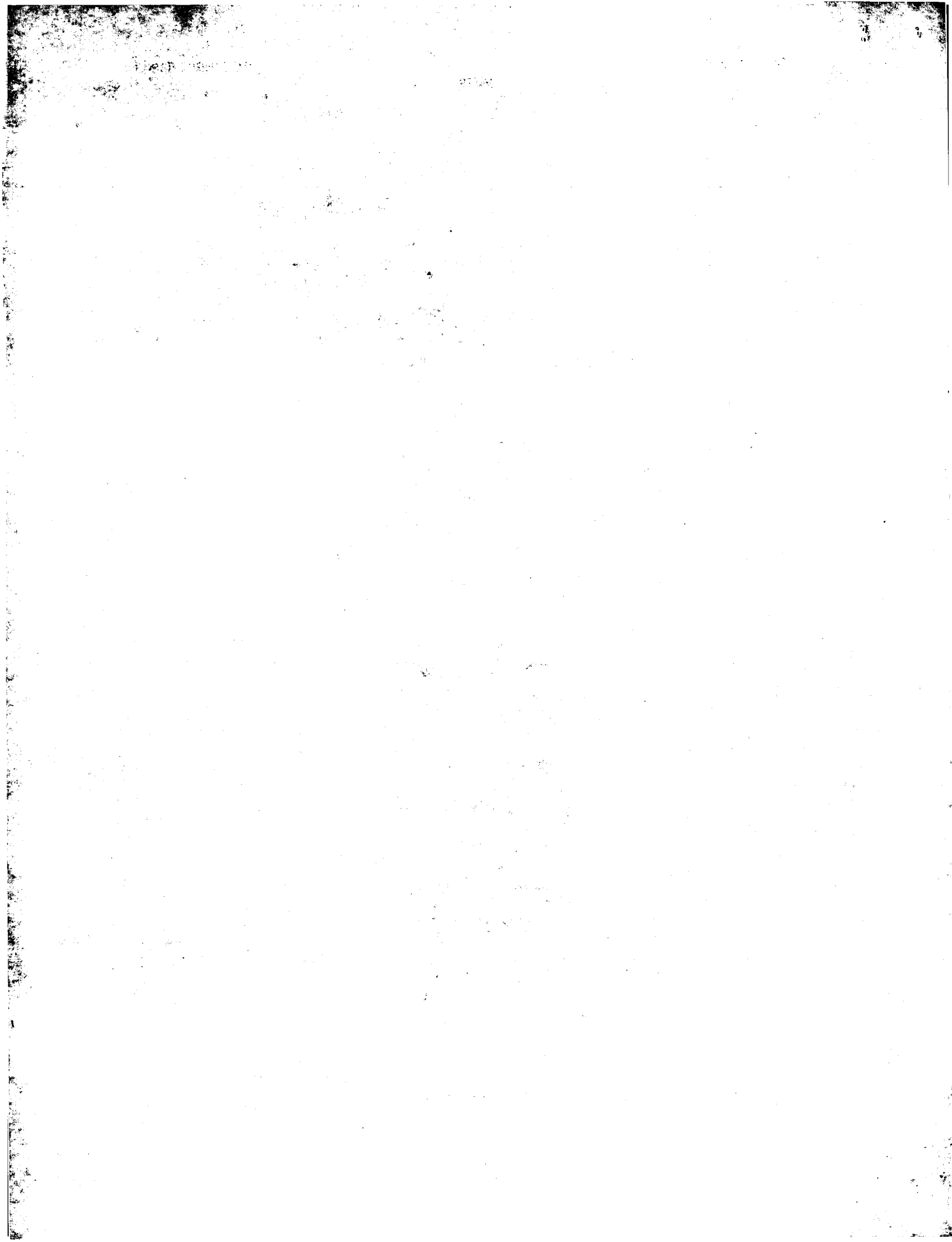


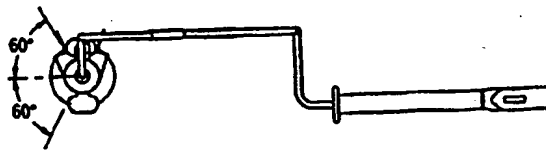
FIG. 4I



OF MATERIALS PER UNIT			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	999-MT120	2K Lamp with Coating - Sylvania
2	2	LS-3425-1	2k Lamp Connector
3	2	LS-3500-1	Lamp Spring Clamp - 2K
4	2	Hdw-1087-1	Screw 6-32 x 3/16" lg button head
5	2	Hdw-1089-1	Locknut 6-32
6	2	MI-920	Connector socket
7	2	LS-3479-1	Lamp lead sleeving

FIG. 5A



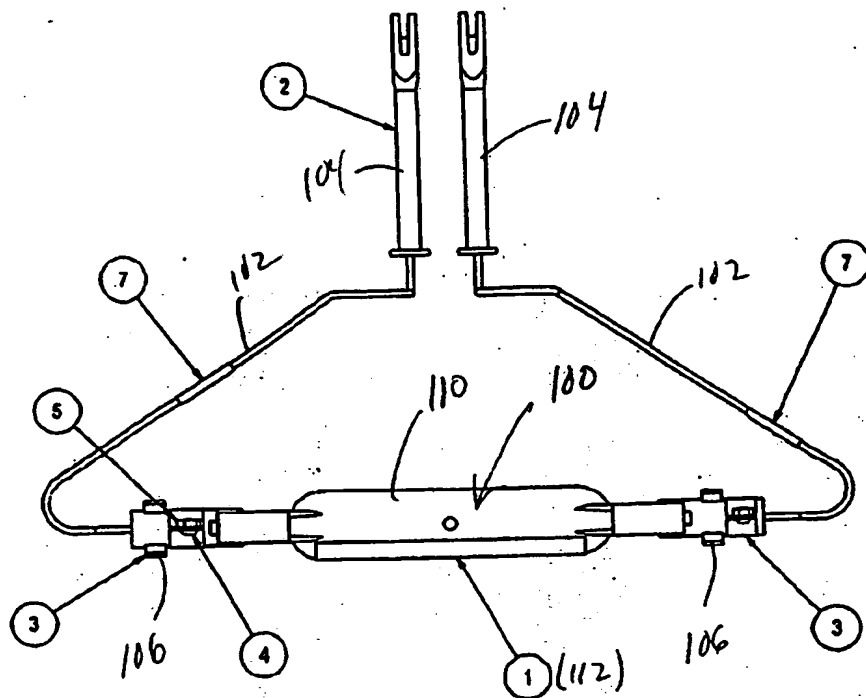


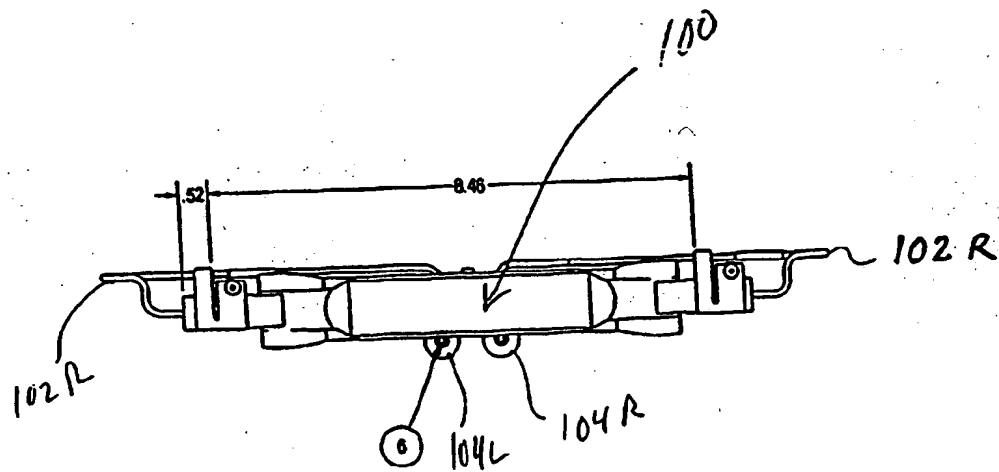
COATING MUST BE CENTERED $\pm 5^\circ$ WHEN LAMP IS PLACED INTO LAMP HOLDERS

FIG. 5B

PART NO.
LS-3406-1

REV. 00000001		DATE	CN
		MANUFACTURING: MUSCATINE, IA 52761 CORPORATE OFFICE: OKLAHOMA, IA 73177	
TOLERANCES: AS 0.01 MAX 0.005 FINISH: 0.032 UNLESS SPECIFIED OTHERWISE IN NOTES		MATERIAL: SEE ABOVE FINISH: NONE	
THE TECHNICAL SPECIFICATIONS FOR THIS DRAWING ARE THE SOLE PROPERTY OF MUSCATINE, IA. NO REPRODUCING OR USE OF THIS DRAWING FOR ANY OTHER THAN ITS INTENDED PURPOSE IS TO BE PERMITTED WITHOUT THE WRITTEN PERMISSION OF MUSCATINE, IA. IS PROHIBITED.		TITLE: Lamp Assembly - 2K PART NO. LS-3406-1 CAD FILE # LS-3406-1.dwg	



**NOTE:**

1. DO NOT TOUCH WITH BARE FINGERS. HANDLE LAMP W/ WHITE COTTON GLOVES.
2. LAMP CAN BE CLEANED WITH DISTILLED WATER OR ALCOHOL. DRY LAMP CAREFULLY WITH COTTON OR CLEAN CLOTH.

FIG. 5D

PART NO.
LS-3479-1

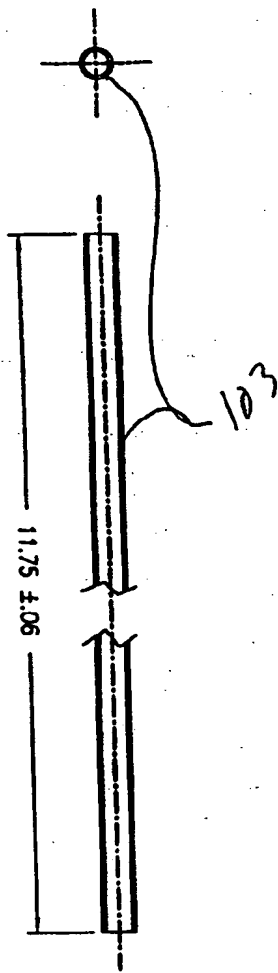


FIG. 5E

-34-

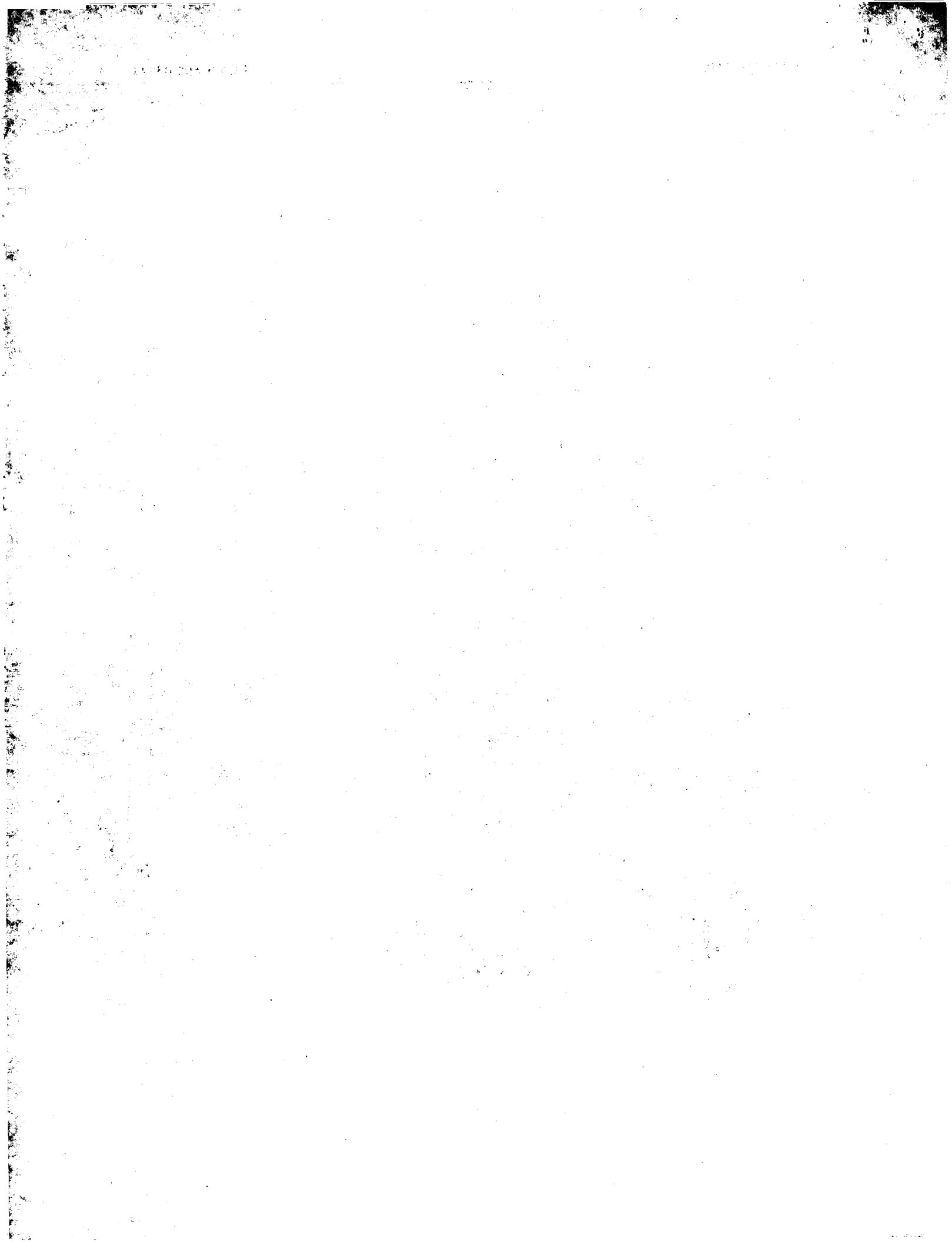
- NOTE:
1. MATERIAL: HILEC INC. FIBERGLASS SLEEVING; 710C #9.
 2. COLOR: WHITE

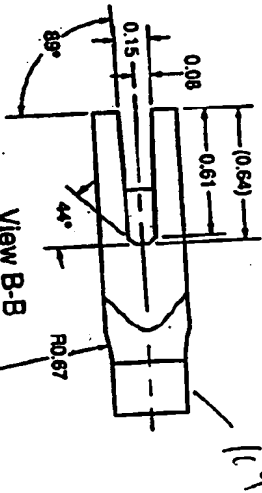
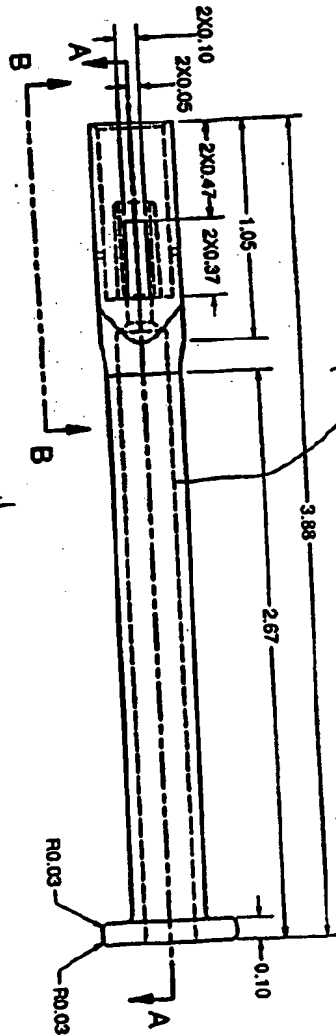
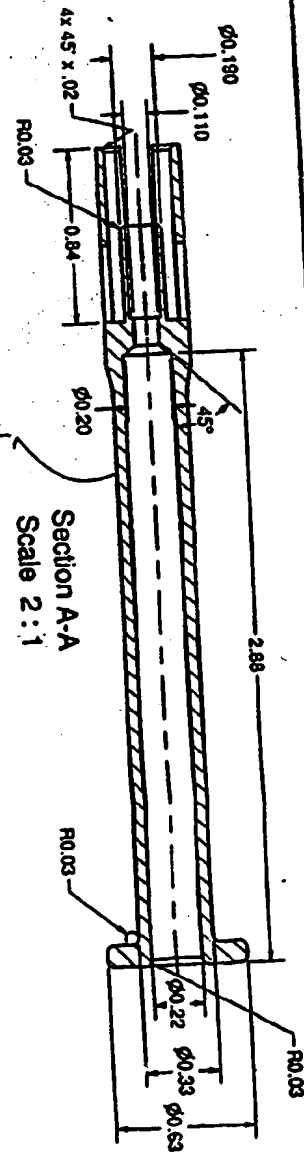
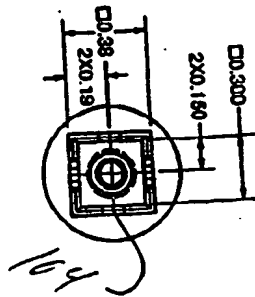
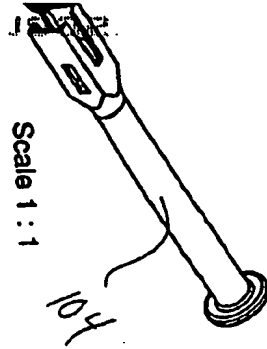
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MANUFACTURING: MUSCATINE, IA 52261 CORPORATE OFFICE: OSKAHOPE, IA 52577	
MATERIAL: SEE NOTE	
FINISH: NONE	
TOLERANCES: XX ± .01 XXX ± .005 FRACTION: 1/32 ANGLES: ± 1°	
UNLESS SPECIFIED DIMENSIONS IN INCHES	
TITLE: SLEEVING- LAMP LEADS	
PART NO. LS-3479-1	
SCALE: 2=1	

60 RLE LS-3479-1





- NOTE:
1. REMOVE ALL BURRS, BREAK ALL EDGES AND SHARP CORNERS .01 MIN.
 2. ALL FILETS AND RADI .03 UNLESS NOTED OTHERWISE.

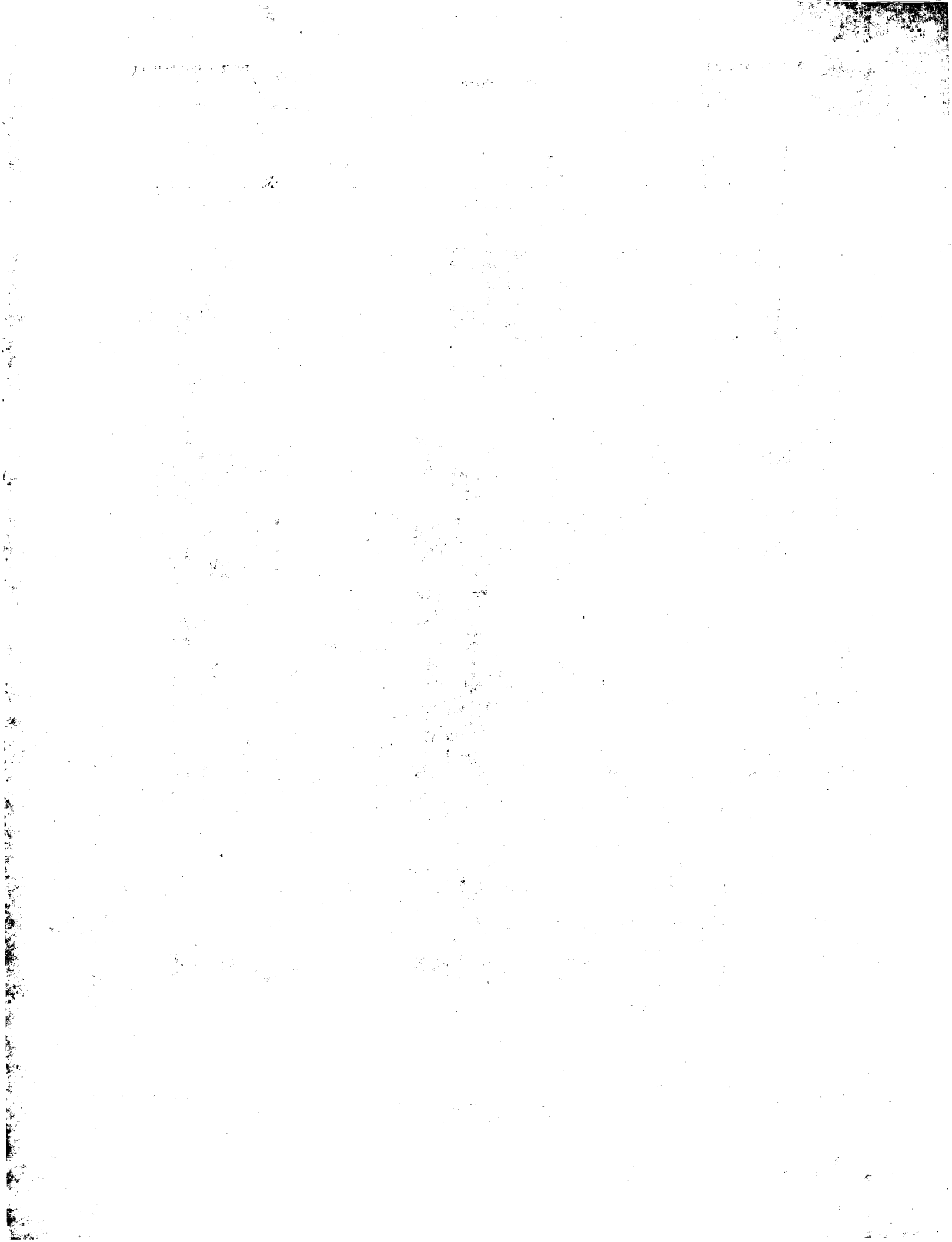
ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED
FRACTIONS ARE TO BE IN DECIMALS
TOLERANCES ARE AS SHOWN
UNLESS OTHERWISE SPECIFIED

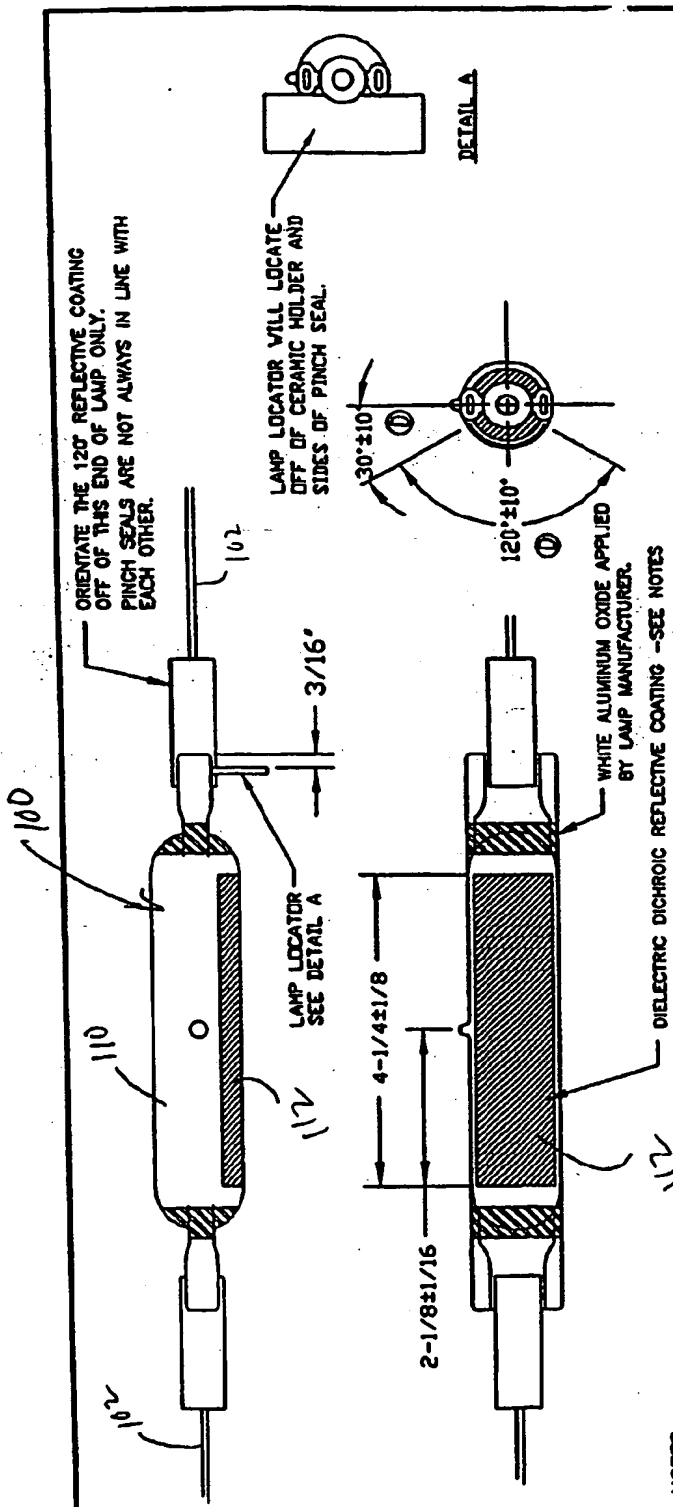
REV	DESCRIPTION	DATE	BY
1	ISSUED FOR PRODUCTION		
PROPOSED MATERIAL: STAINLESS STEEL 304 FINISH: NONE TITLE: 2x Lamp Connector			

PART NO.
LS-3425-1

PART NO.
LS-3425-1

-35-



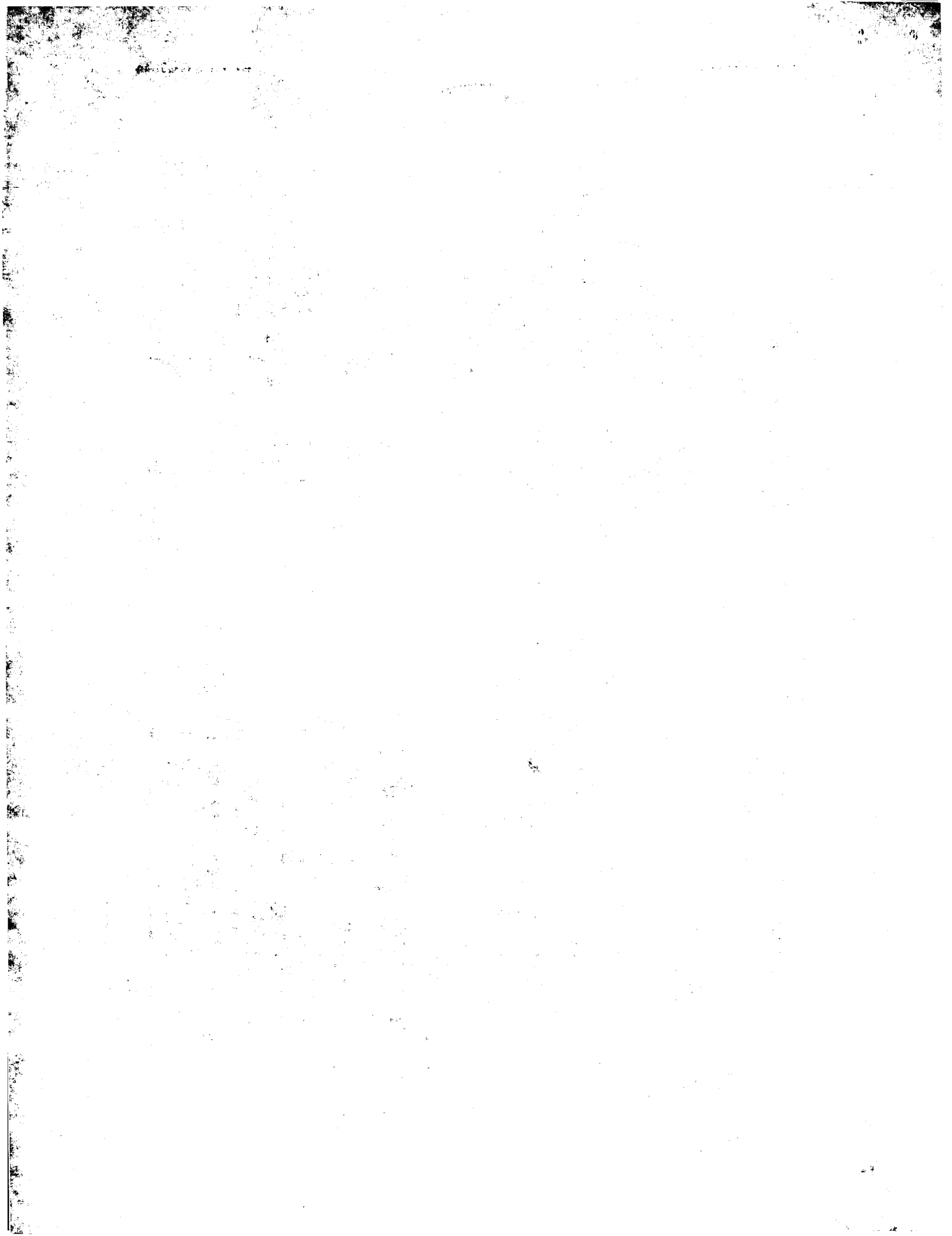


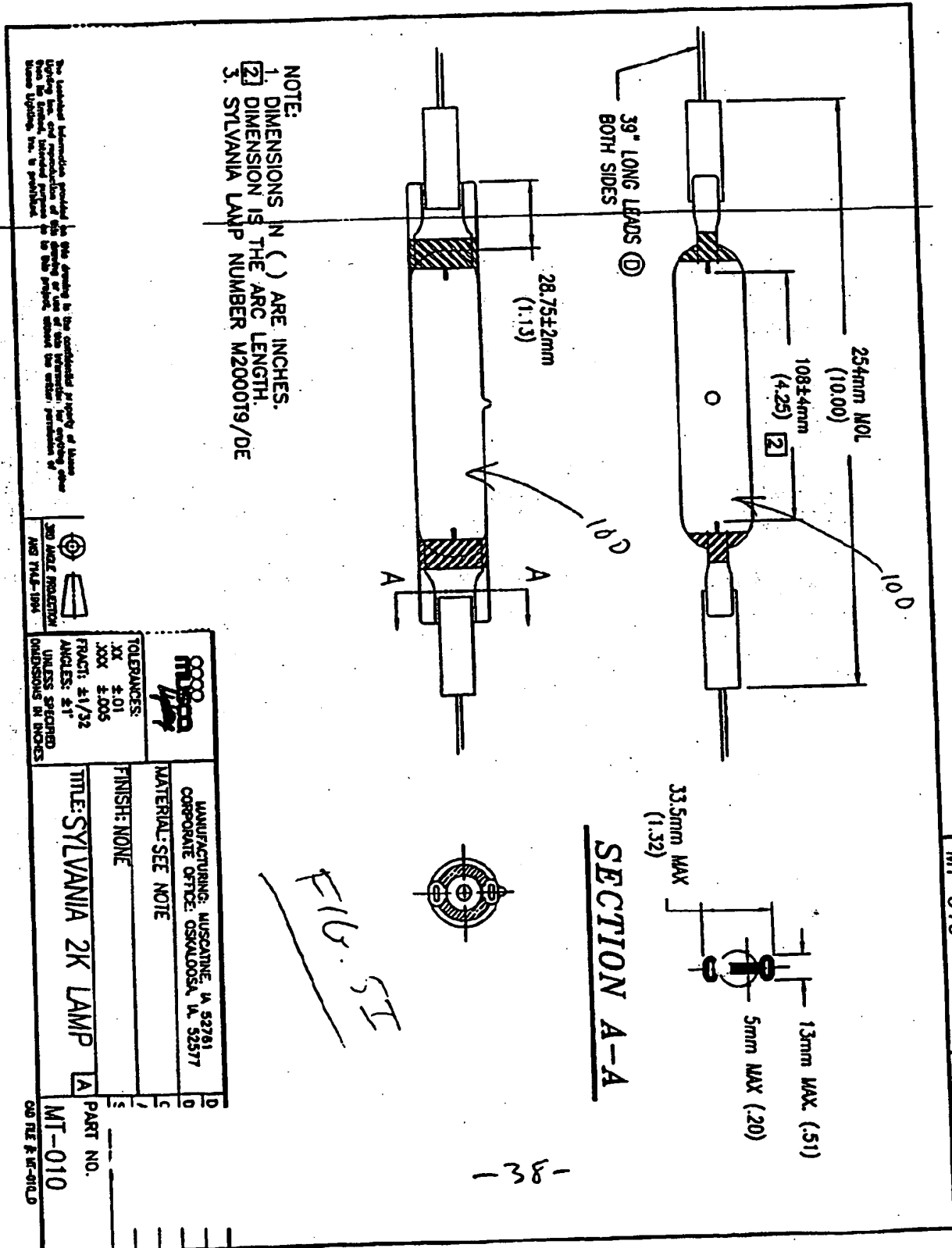
NOTES:

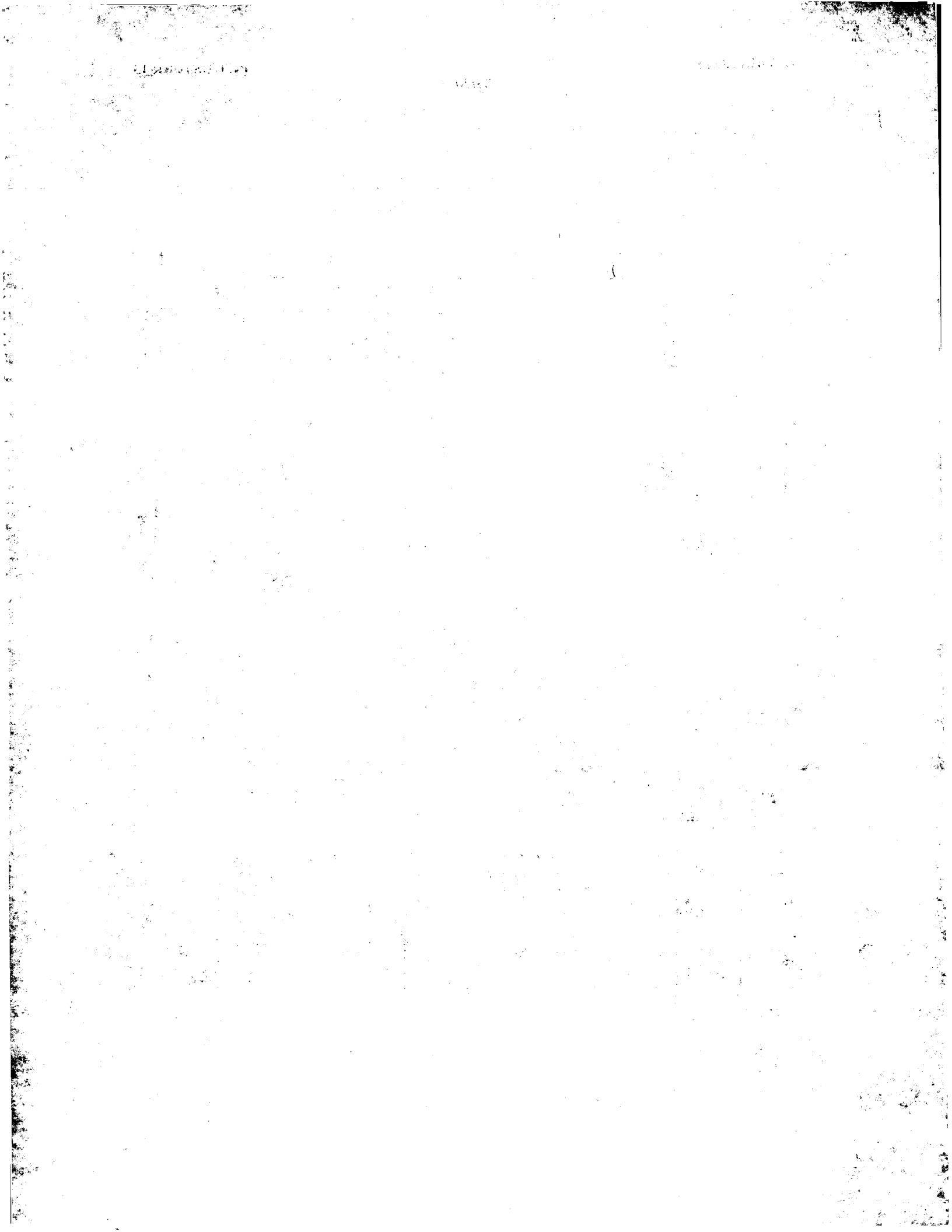
1. REFLECTIVE COATED PARTS SHALL HAVE A TRANSMISSION AT NORMAL INCIDENCE OF LESS THAN 1% AVERAGE FROM 400nm TO 700nm, AND GREATER THAN 70% AVERAGE TRANSMISSION AT NORMAL INCIDENCE FROM 800nm TO 1500nm. COATING SHALL BE DESIGNED FOR GREATER THAN 90% REFLECTION FROM 400nm TO 700nm.
2. REFLECTIVE COATING SHALL SURVIVE RAPID THERMAL SHOCK TO 900 DEGREES C. THIS SHALL BE TESTED FOR BY INSERTION OF A COATED WITNESS PLATE INTO A TEST CHAMBER HELD AT 900 DEGREES C, HOLDING THE WITNESS AT ROOM TEMPERATURE FOR 30 MINUTES, AND RAPID WITHDRAWAL OF THE WITNESS TO ROOM TEMPERATURE. THE COATING ON THE WITNESS PLATE SHALL SURVIVE THIS TEMPERATURE CYCLE WITH NO LOSS OF COATING.
3. REFLECTIVE COATING SHALL SURVIVE STANDARD 24 HOUR HUMIDITY TEST AT 49 DEGREES C, AND PASS QUICK TAPE TEST.
4. FILM CRACKING AND CRYSTALLIZATION OF THE REFLECTIVE COATING SHALL BE ACCEPTABLE, PROVIDED THAT NO COATING VOID SHALL BE LARGER THAN 0.010 INCHES IN ITS LARGEST DIMENSION.
5. COAT 360 DEGREES OF THE ARC TUBE WITH UV BLOCKING FILM. THE UV BLOCKING SHALL PRODUCE A COATING DESIGNED TO HAVE T < 0.01 OR = 1% AVERAGE FROM 200nm TO 380nm WHILE MAINTAINING T > 0.01 OR = 95% AVERAGE IN THE VISIBLE SPECTRUM FROM 380nm TO 700nm. THE FILM MUST WITHSTAND LONG TERM EXPOSURE TO APPROXIMATELY 1000° C.

Fig. 5H

PART NAME	TOLERANCES UNLESS OTHERWISE NOTED
SYLVANIA 2K LAMP COATING	FRACTIONAL $\pm 1/32$
MATERIAL: MUSCO P/N HT-Q10	ANGULAR $\pm 1/2^\circ$
CLAMP-SYLVANIA M2000T9/DEJ	DECIMAL .XXX $\pm .005$
FINISH: SEE NOTES	
SPORTS LIGHTING INC.	
SCALE: 1:1	

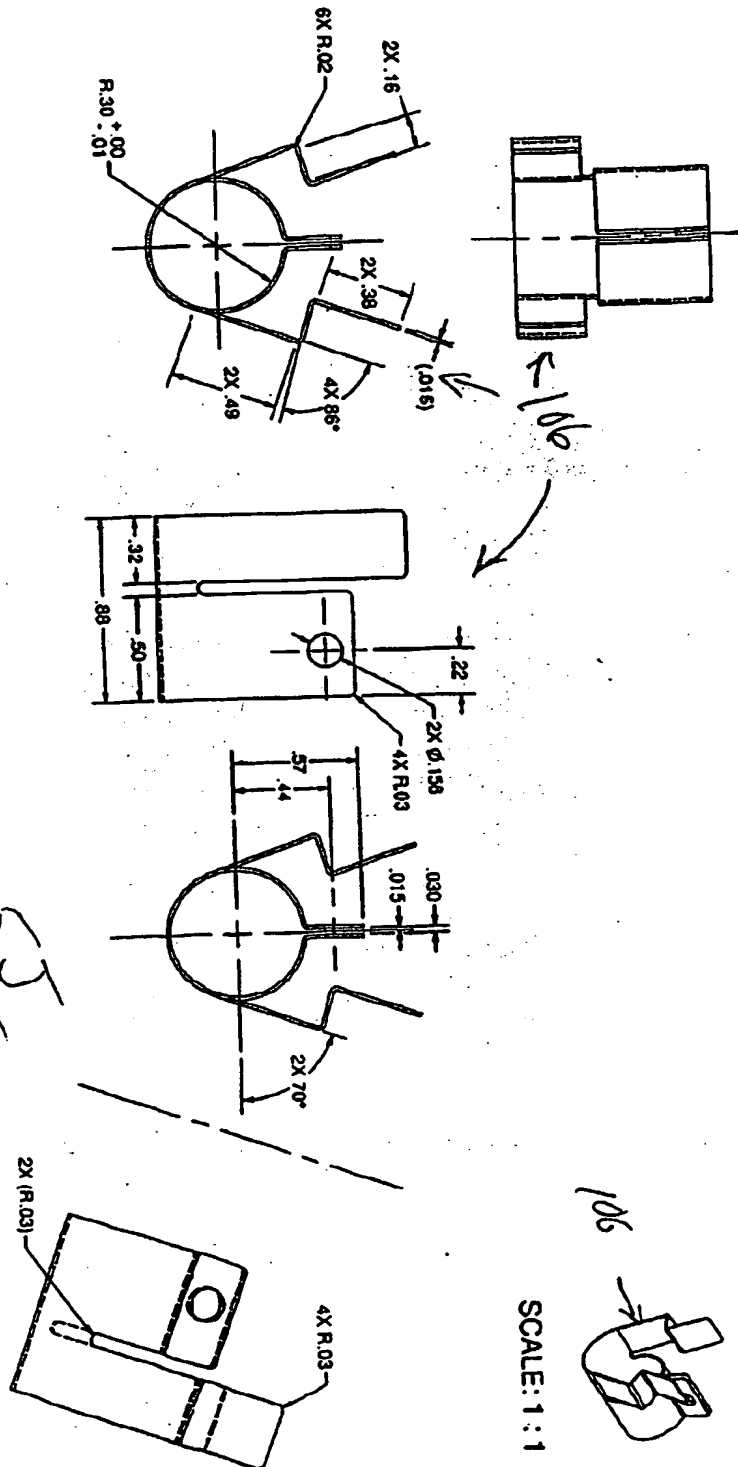






PART NO.
LS-3500-1

SCALE: 1:1



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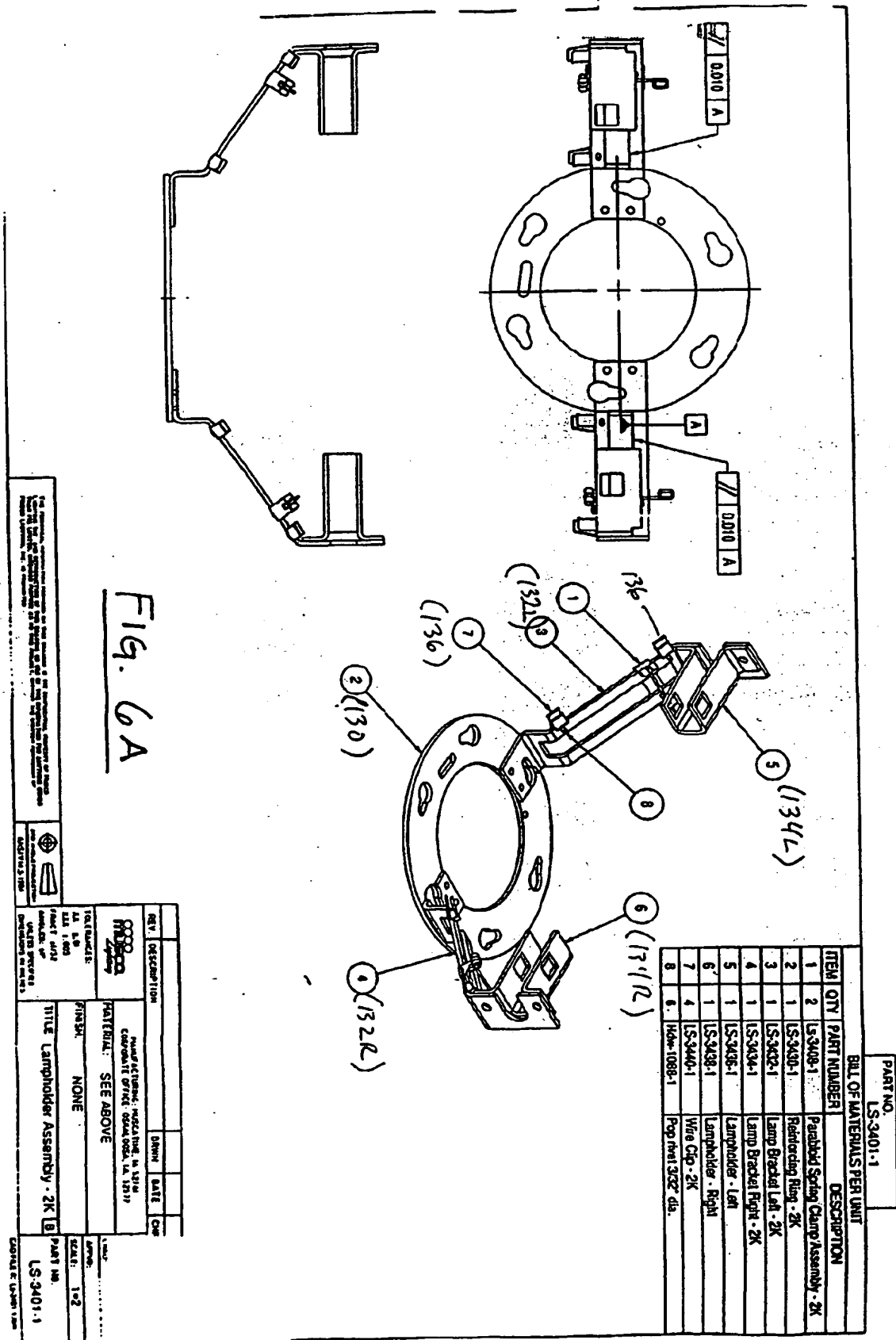
- NOTE:
1. REMOVE ALL BURRS. BREAK ALL EDGES AND SHARP CORNERS .01 MIN.
 2. MATERIAL: 300 SERIES STAINLESS STEEL FULL HARD TEMPER ROCKWELL C 40-45.
 3. PASSIVATE PER ASTM A380.
 4. PARTS TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT.

THE DRAWING IS UNLESS OTHERWISE SPECIFIED, TO BE CONSIDERED AS A REPRESENTATION OF THE DESIGN AND NOT A GUARANTEE OF PERFORMANCE. THE DRAWING IS NOT TO BE USED FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN PERMISSION OF THE DRAWING ENGINEER.



REV.	DESCRIPTION	DATE	CHG
1	MANUFACTURING: INDICATING IN 37°		
2	CORPORATE OFFICE: CHALMERS, N. 8727		
3	MATERIAL: .015 THK STAINLESS SEE NOTE		
4	FINISH: SEE NOTES		
5	DATE: 1-8-83		
6	DRW: 1-8-83		
7	UNIT: 1-8-83		
8	PROJECT: 1-8-83		
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98	PROCESS: 1-8-83		
99	PROCESS: 1-8-83		
100	PROCESS: 1-8-83		

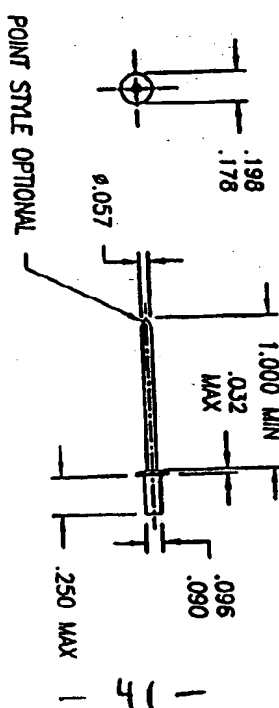
TITLE: Lamp Spring Clamp - 2K
PART NO.
LS-3500-1
SCALE: 2-1
CONTRACT: LS-3500-1



PART NO.
HDW-1088-1

MATERIAL SPECIFICATIONS

1. NAME: DOME HEAD BLIND RIVET
2. MATERIAL: ALUMINUM BODY, ALUMINUM MANDREL
3. SIZE: RIVET #41 (3/32 NOM.)
4. GRIP RANGE: .020"-.125"
5. RECOMMENDED HOLE SIZE: .097"-.100"
6. RECOMMENDED DRILL SIZE: #41
7. FINISH: ANODIZE PER MIL SPEC MIL-A-8625F, TYPE II, CLASS 1, CLEAR, LIGHT ETCH.



F16. 6A-2

NOTE:
1. FASTENER SHALL COMPLY WITH INDUSTRIAL FASTENER INSTITUTE STANDARDS.

	MANUFACTURING: MUSCATINE, IA 52761 CORPORATE OFFICE: OSKAHOUSA, IA 52577
	MATERIAL: SEE ABOVE FINISH: SEE ABOVE
TOLERANCES: XX $\pm .01$ XXX $\pm .005$ FINISH: $\pm 1/32$ ANGLES: $\pm 1^\circ$ UNLESS SPECIFIED DIMENSIONS IN INCHES	TITLE: BLIND RIVET DOME HEAD #41 (3/32 NOM) PART NO. HDW-1088-1

30 HOLE RIVET
MIL-STD-194

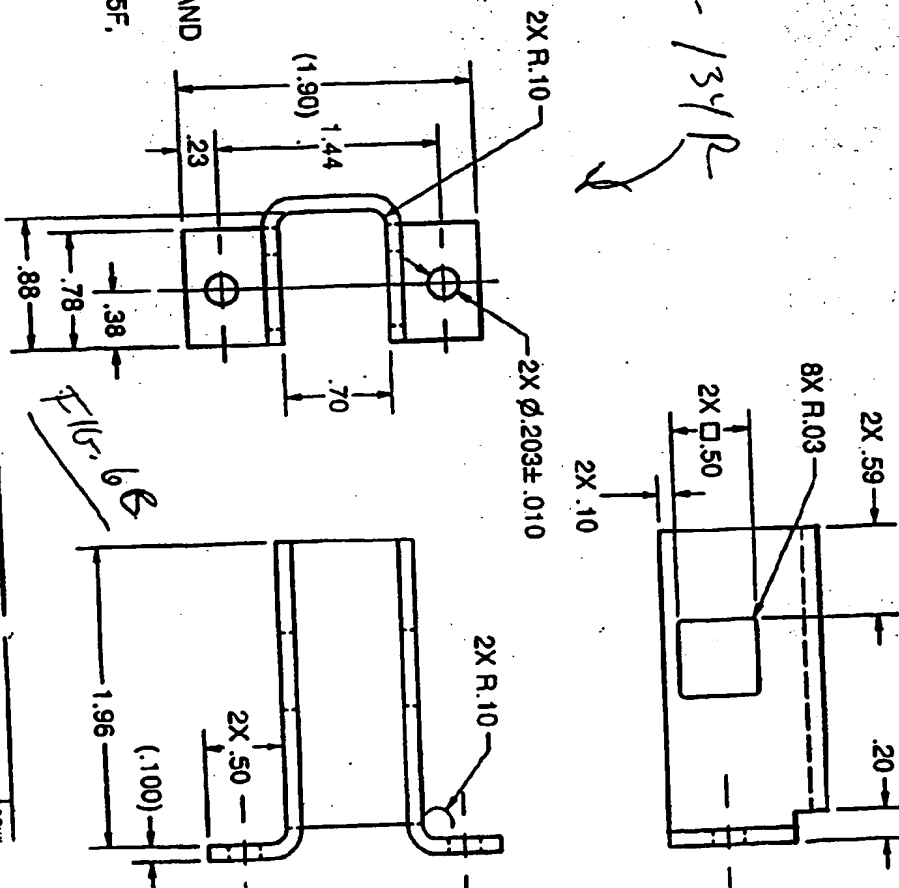
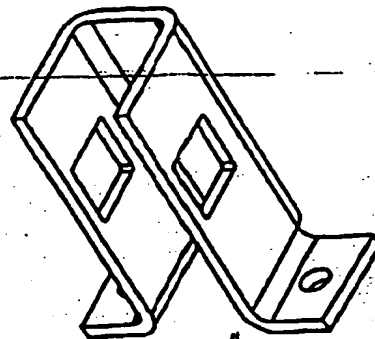
SCALE: 1=1

CO FILE # 108-1088-1

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PART NO.
LS-3438-1

- NOTE:
1. REMOVE ALL BURRS. BREAK ALL EDGES AND SHARP CORNERS .01 MIN.
 2. FINISH: ANODIZE PER MIL SPEC MIL-A-8625F, TYPE II, CLASS 1, CLEAR, LIGHT ETCH.
 3. PARTS TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT.



REV. DESCRIPTION

DRWN DATE CHGD

APVD ECN

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3RD ANGLE PROJECTION
AND V.M.S. 1984

UNLESS SPECIFIED
DIMENSIONS IN INCHES

TITLE: Lampholder - Right

FINISH: SEE NOTES

MATERIAL: 100 THK ALUMINUM

MANUFACTURING: MASCATINE, IA 52761
CORPORATE OFFICE: OSKALOOSA, IA 52577

5052-H32

TOLERANCES:

XX 1.01

XXX 3.005

FRACT: .0132

ANGLES: 1°

APPROX.

SCALE: 1=1

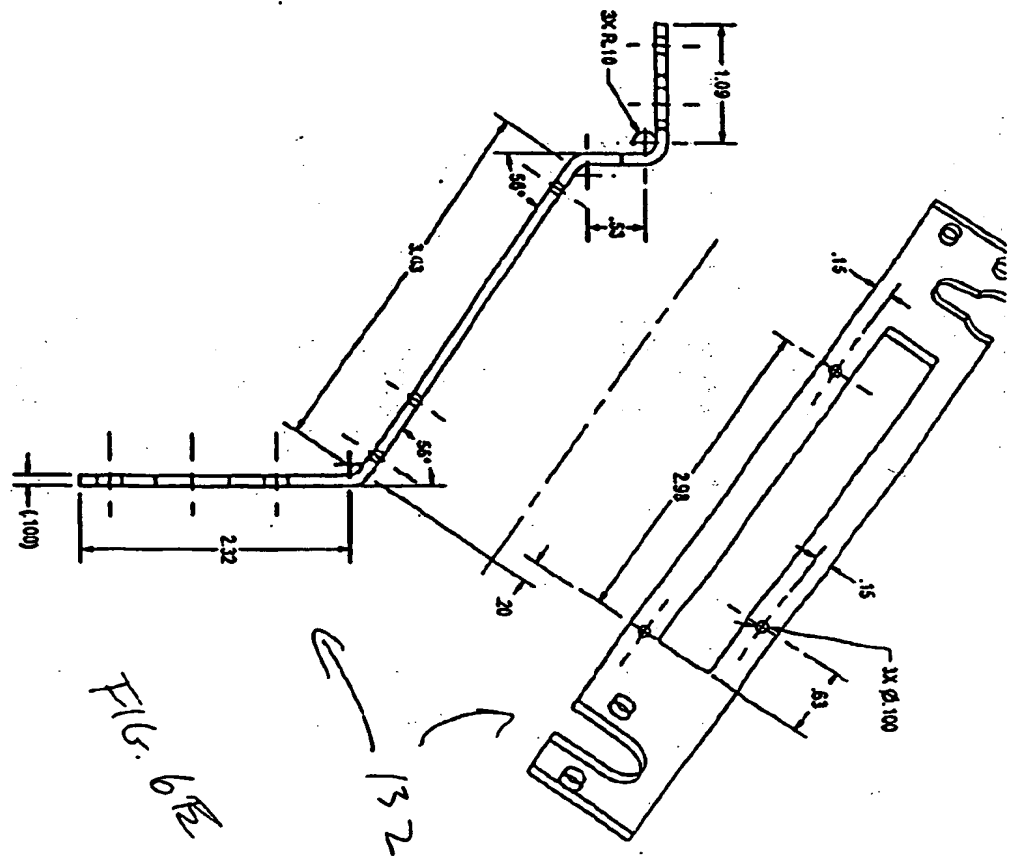
PART NO.

LS-3438-1

CAD FILE: LS-3438-1.D

NOTE

1. REMOVE ALL BURRS. BREAK ALL EDGES AND SHARP CORNERS .01 MIL.
2. ALL FILETS AND RADIUS UNLESS NOTED OTHERWISE.
3. FINISH AND DIZE PER MIL SPEC MIL-A-88235 TYPE II, CLASS 1, CLEAR, LIGHT ETCH
4. ANGLES TOLERANCE $\pm 1/2^\circ$
5. PARTS TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT.



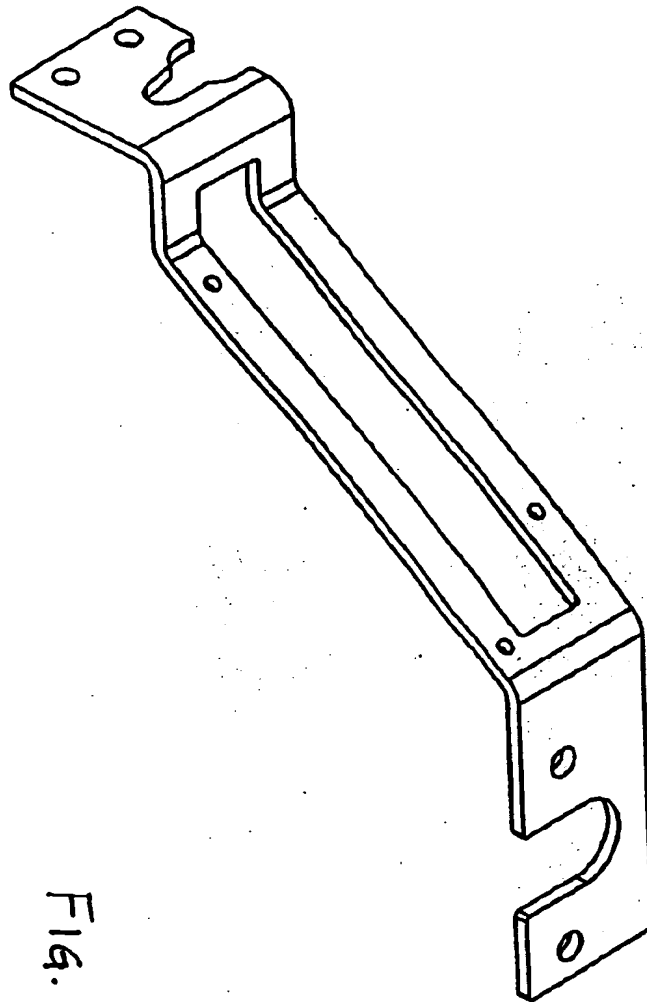
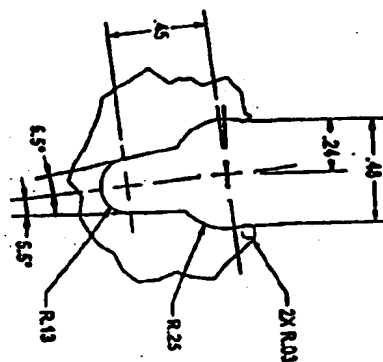


FIG. 6F

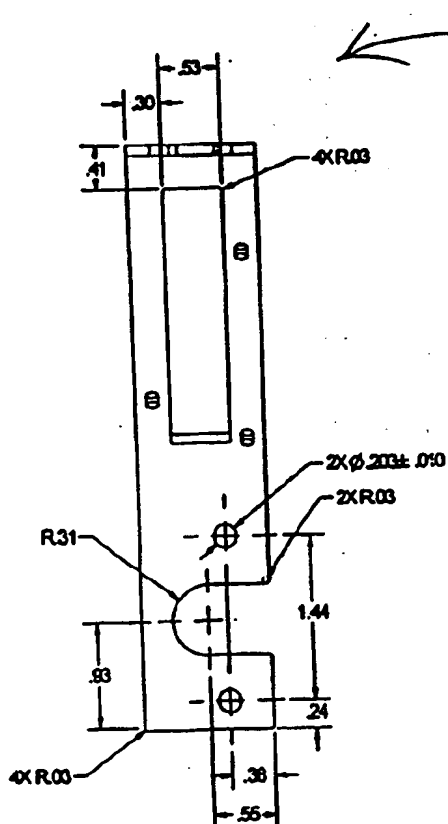
132

FIG. 66

Detail A
Scale 2:1



132

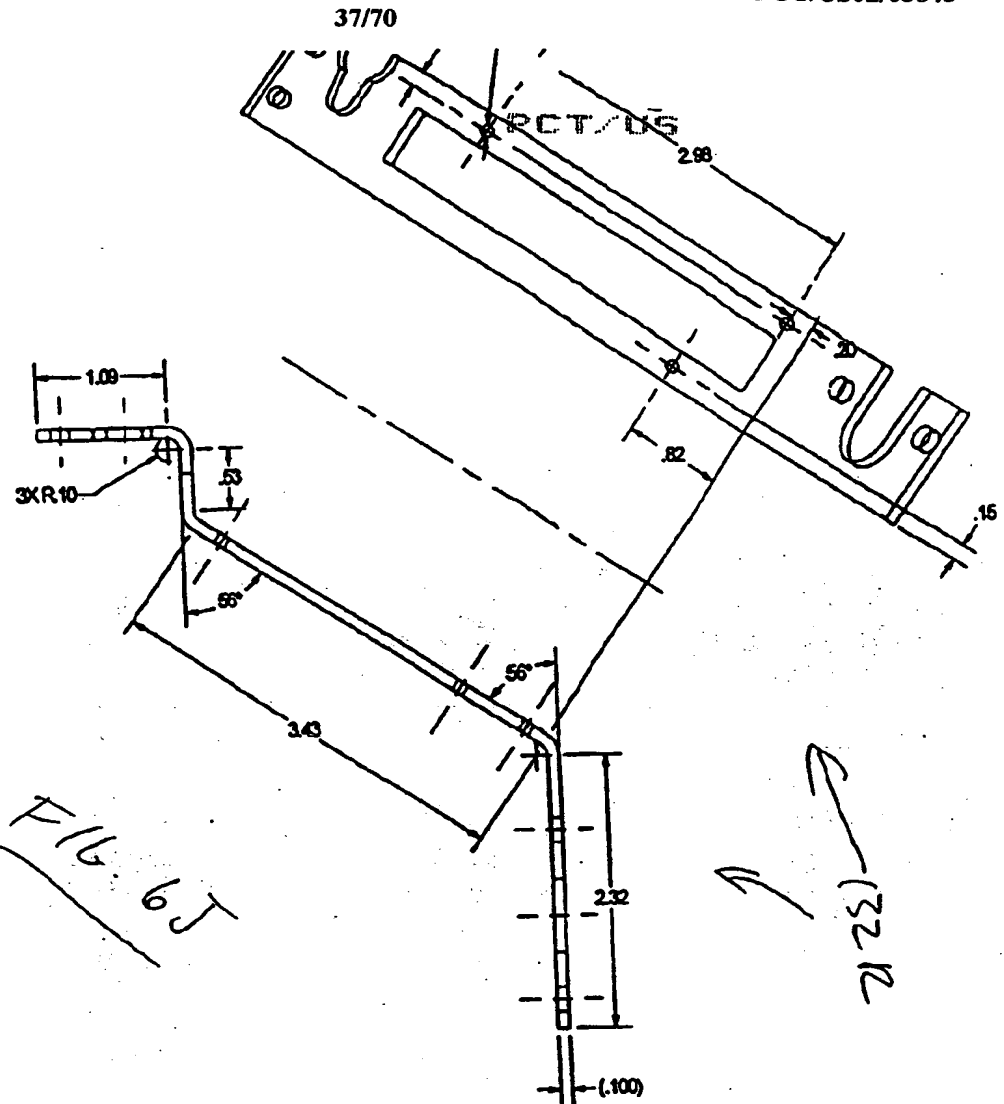


PART NO.
Ls-3498-1

See customer specification for details of this drawing in the customer's drawing of detail.
This drawing is the property of the customer and is not to be used for any other purpose without the written consent of the customer.
This drawing is the property of the customer and is not to be used for any other purpose without the written consent of the customer.

SEE CUSTOMER SPECIFICATION
AND THIS DRAWING

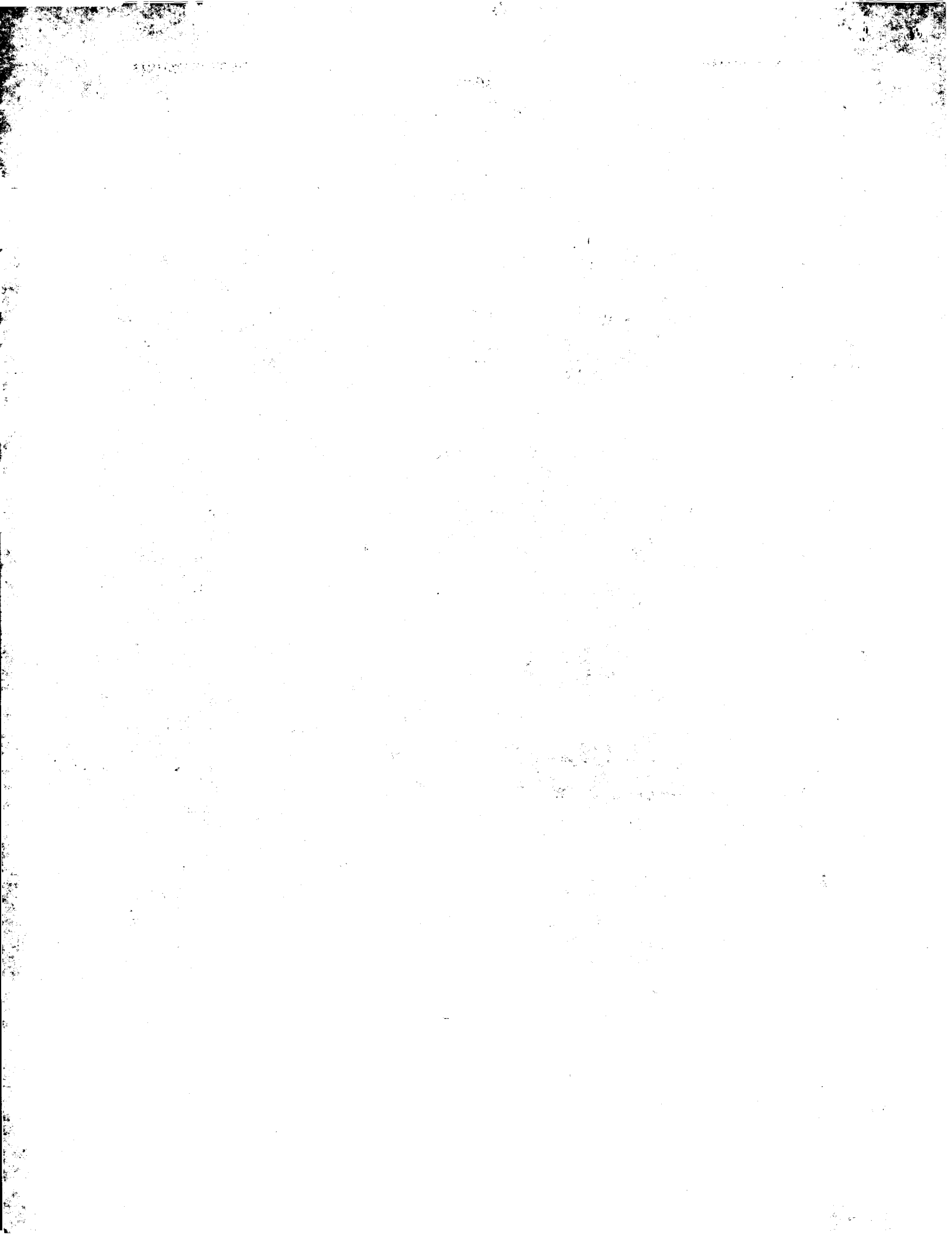
REV.	DESCRIPTION	DRWN	DATE	QTY
001	MANUFACTURING: MICHIGAN, IA 53701 CORPORATE OFFICE: OMAHA, IA 55117			
MATERIAL: .100 THK ALUMINUM 5052-H32		SCALE 1=1		
FINISH: SEE NOTES		PART NO. Ls-3498-1		
TITLE: Lamp Bracket Right - 2K		C		



NOTE

1. REMOVE ALL BURRS. BREAK ALL EDGES AND SHARP CORNERS .01 MIN.
2. ALL FILLETS AND RADII .03 UNLESS NOTED OTHERWISE.
3. FINISH: ANODIZE PER MIL SPEC MIL-A-8625F, TYPE II, CLASS 1, CLEAR, LIGHT ETCH.
4. ANGLE TOLERANCE: $\pm 1/2^\circ$
5. PARTS TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT.

FIG. 6J



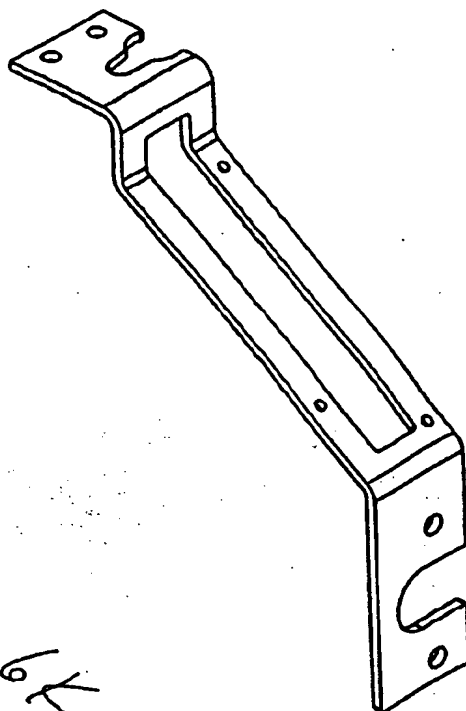
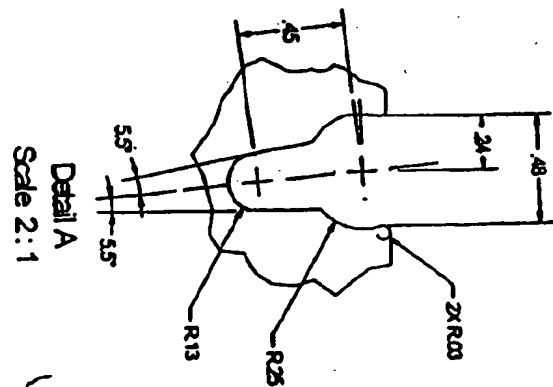


FIG. 6K

← 132R

FIG. 6L

132R →



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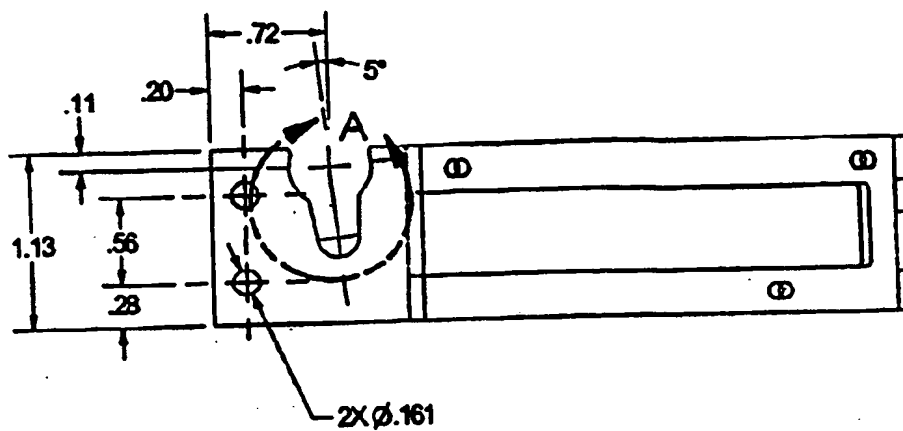
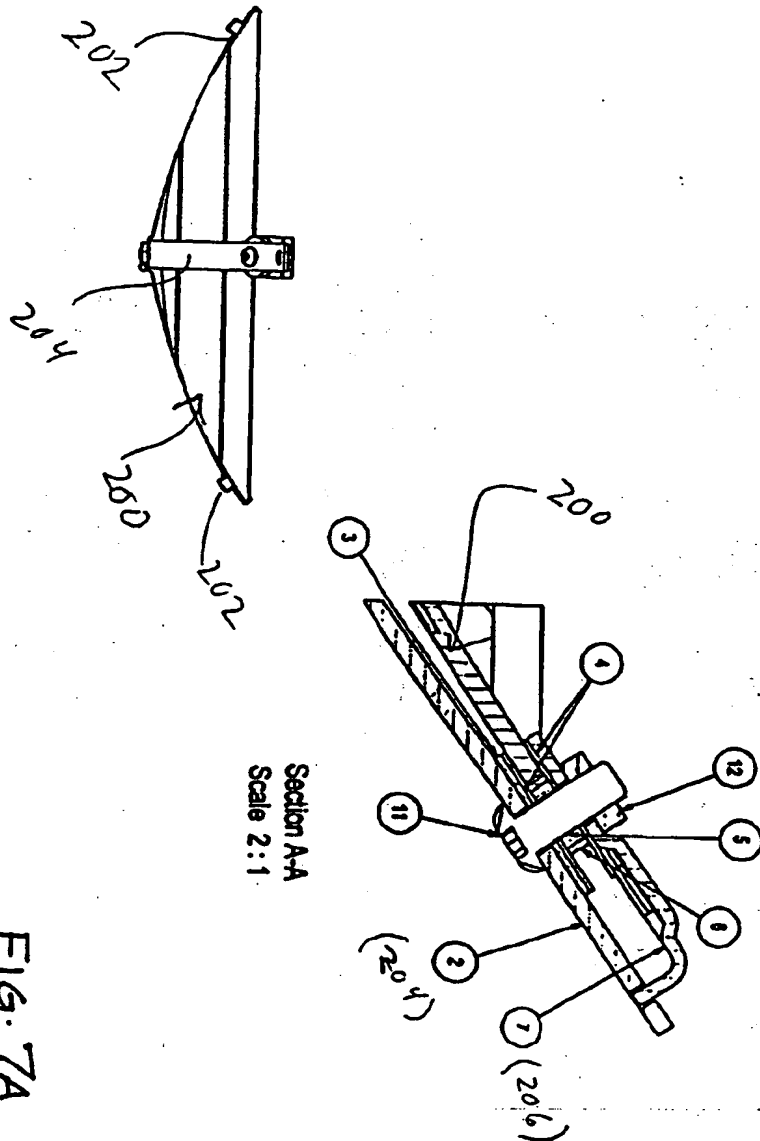





FIG. 6M

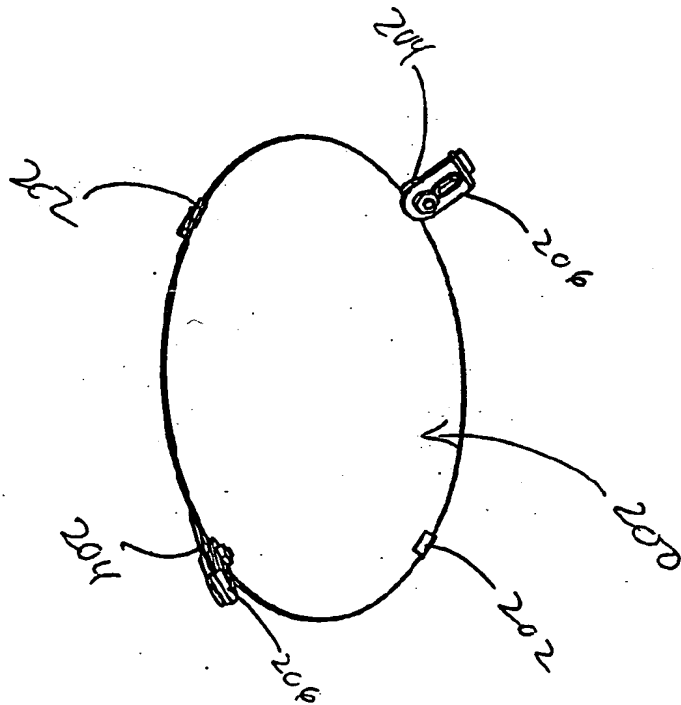
132R



Section A-A
Scale 2:1

PART NO. 1-20402-1

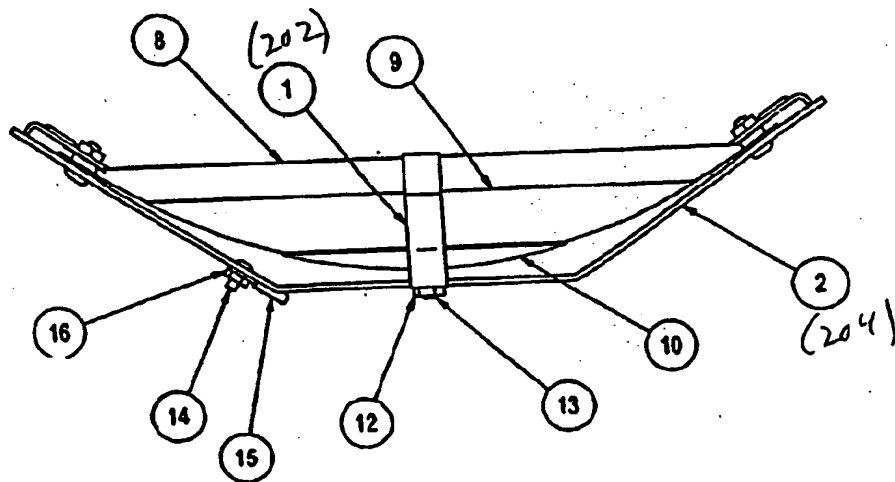
- RELEASE -		MAT	
REV.	DESCRIPTION	DRAWN	
  		TITLE: PARCHEILD ASSEMBLY DATE: 1-2-74 DRAWN BY: W. J. B. B. CHECKED BY: W. J. B. B. APPROVED BY: W. J. B. B. INCHES: 1/2 SHEET: 1	
MATERIAL: SEE ABOVE FINISH: NONE		PART NO. L-3-402-1 QTY. 1	



BILL OF MATERIALS PER UNIT		
ITEM	QTY	PART NUMBER DESCRIPTION
1	1	LS-3412-1 Vertical bracket/theta assembly
2	1	LS-3450-1 Parabolic Horizontal Bracket - 2K
3	2	LS-3464-1 Steel Washer - 2K
4	4	LS-3465-1 Teflon Washer - 2K
5	2	LS-3469-1 Steel Bushing - 2K
6	2	LS-3470-1 Teflon Bushing - 2K
7	2	LS-3474-1 Parabolic Clamp - 2K
8	1	LS-3475-1 Parabolic Reflector - 2K
9	1	LS-3476-1 1" Ceramic Bushing
10	1	LS-3476-1 1" Ceramic Bushing
11	2	MSW-1019 Screw 10-24 x 1/2" by button head
12	3	MSW-1003 Locknut 10-24
13	1	Hdw-1008 Screw 10-24 x 1/4" by button head
14	1	Hdw-1085-1 Screw 6-32 x 3/8" by button head
15	1	LS-3476-1 Retaining Cable
16	1	Hdw-1089-1 Locknut 6-32

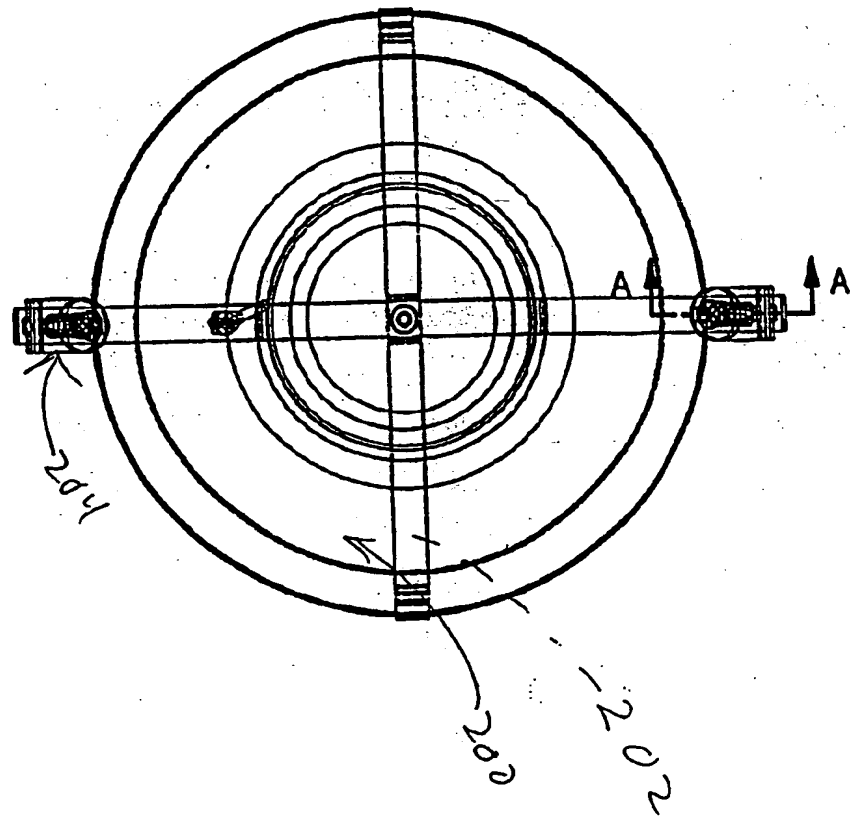
FIG. 1B

-55-

FIG. 7C**NOTE:**

1. NO FINGER PRINTS OR FOREIGN MATTER ON MIRROR. USE WHITE COTTON GLOVES WHEN ASSEMBLING.
2. DO NOT ATTEMPT TO CLEAN MIRROR.

FIG. 7D



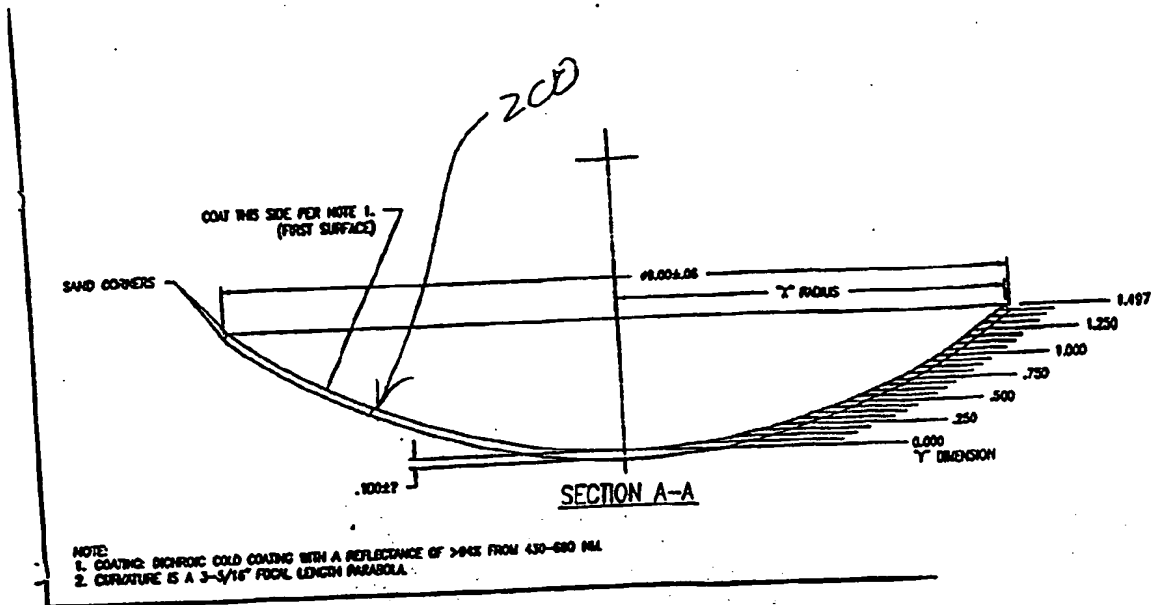


FIG. 7E

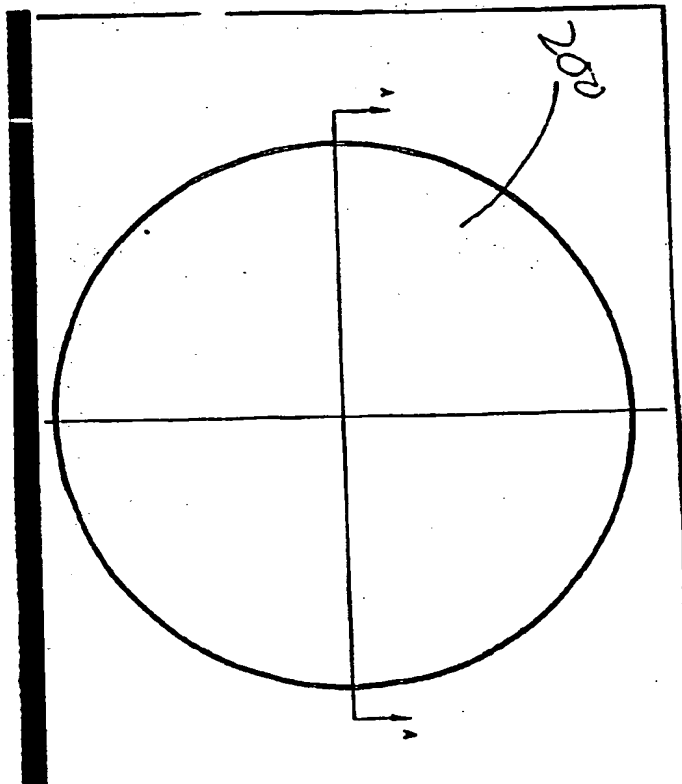



FIG. 7F

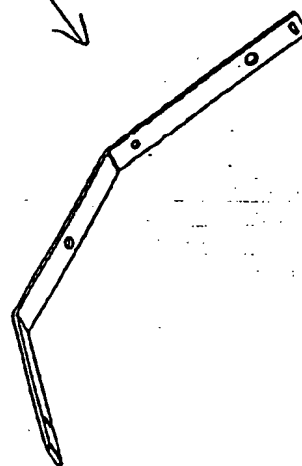
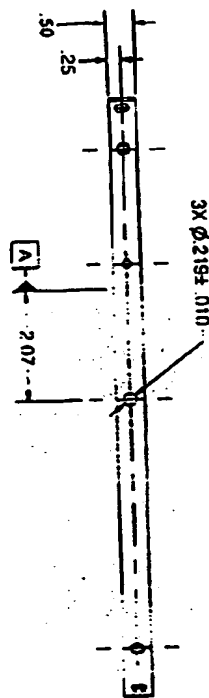
FIG. 76

X" RAD	Y" DIM
.911	.063
1.287	.125
1.576	.188
1.820	.250
2.035	.313
2.229	.375
2.408	.438
2.574	.500
2.730	.563
2.878	.625
3.018	.688
3.152	.750
3.281	.813
3.405	.875
3.524	.938
3.640	1.000
3.752	1.063
3.861	1.125
3.967	1.188
4.070	1.250
4.170	1.313
4.268	1.375
4.364	1.438
4.453	1.497

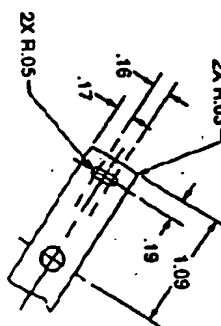
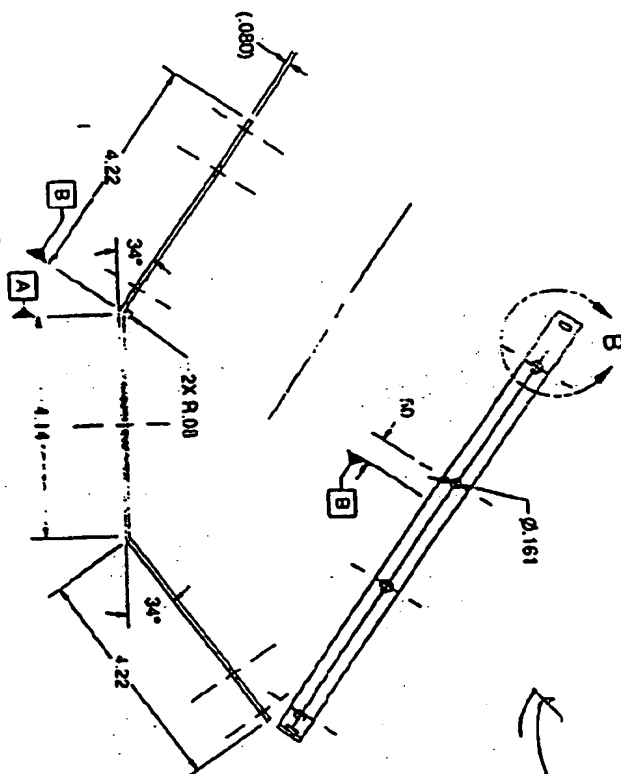
PART NO.
LS-4000-1

RELEASE		MLK
REV.	DESCRIPTION	DRWN
		MANUFACTURING: MUSCATINE, IA 52781 CORPORATE OFFICE: OSGALOGA, IA 52377
TOLERANCES:		MATERIAL: GLASS
.001 .002 .005 .010 .020 .030 .040 .050 .060 .070 .080 .090 .100 .125 .150 .175 .200 .250 .300 .375 .450 .500 .562 .625 .750 .875 1.000 1.250 1.500 1.750 2.000 2.500 3.000 3.750 4.500 5.000 6.000 7.000 8.000 9.000 10.000		FINISH: SEE ABOVE
TITLE: PARABLOID 3-5/16" E COATED FIRST SURFACE		SCALE: 1=1 PART NO. LS-4000-1

PART NO.
LS-3460-1




- 61 -

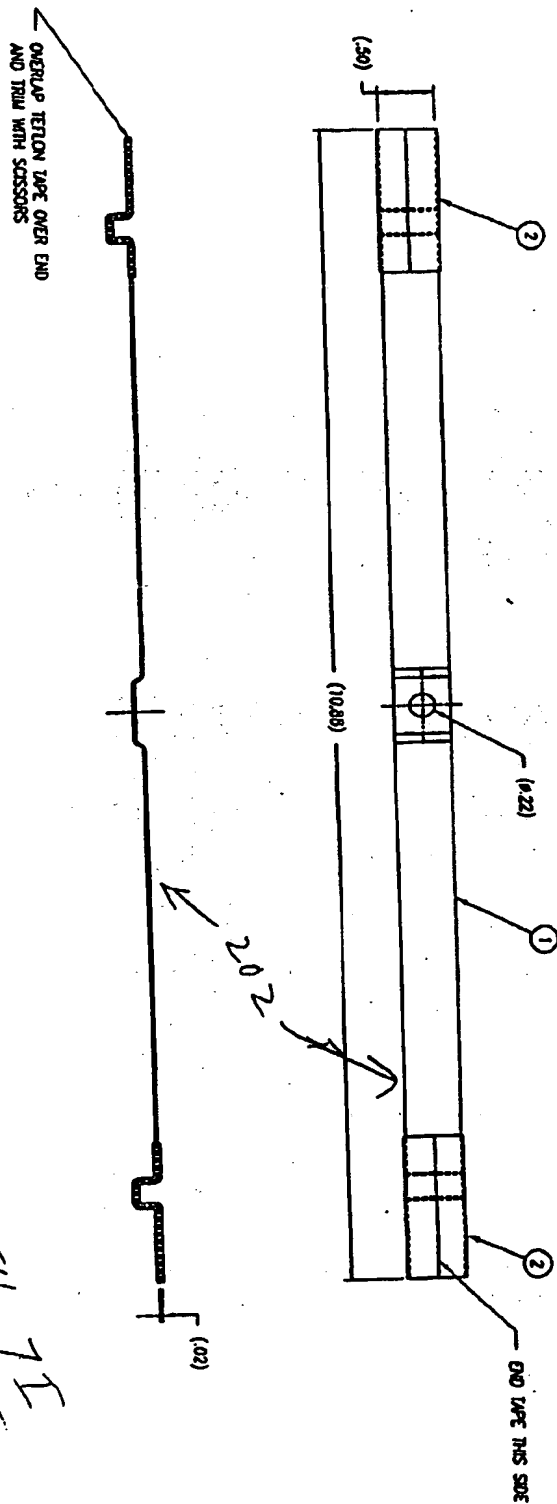


2X Detail B
Scale 1 : 1

File 74

NOTE:
1. REMOVE ALL BURRS. BREAK ALL EDGES AND SHARP CORNERS .01 MIN.
2. FINISH: ANODIZE PER MIL SPEC MIL-A-8625F. TYPE II, CLASS 1, CLEAR, LIGHT ETCH.
3. ANGLE TOLERANCE: ± 1/2
4. PARTS TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT.

REV.	DESCRIPTION	ISSUED	DATE	CD
	 ROHM & HAAS COMPANY 1000 MARKET STREET, PHILADELPHIA, PA. 19103 COMMERCIAL SERVICE DEPARTMENT, PHILADELPHIA, PA. 19103			
	TOLL FREE 1-800-368-6868 IN PA. 215-582-1000 FAX 215-582-1001 MAILING: 10032 LOCATED IN PHILADELPHIA, PA. 19103			
	TITLE: Paraboloid Horizontal Bracket - 2K	PART NO. 15C-3460-1	SCALE 1:2	APPROV. DATE
	PART NO. 15C-3460-1	SCALE 1:2	APPROV. DATE	CD



NOTE:
1. TOTAL QUANTITY OF TAPE (ITEM 2) SHOWN IN THE BILL OF MATERIAL IS
USED 3" ON EACH END.

BILL OF MATERIALS PER UNIT		
ITEM QTY	DESCRIPTION	PART #
1 1	PRISM (OD VERTICAL BRACKET	15-342-1
2 6	TETLUM WAF (2 X 5)	15-343-1

PART NO
LS-3412-1

<div style="display: flex; justify-content: space-between;"> <div> <p>UNCLASSIFIED</p> <p>DATE 10-15-2011</p> </div> <div> <p>RELEASE</p> </div> </div>	
<div style="display: flex; justify-content: space-between;"> <div> <p>REV. DESCRIPTION</p> <p>1477</p> </div> <div> <p>MANUFACTURING, LAUSING, N. 34781</p> <p>CORPORATE OFFICE, OSMAUSING, N. 35217</p> </div> </div>	
<p>MATERIAL: SEE ABOVE</p>	
<p>FINISH: NONE</p>	
<p>SCALE: 1:1</p>	
<p>PART NO.</p>	
<p>TOLERANCES:</p> <p>IN ±.01</p> <p>IN ±.001</p>	
<p>DATE: 3/1/78</p> <p>INCHES: 3/16</p> <p>INCHES SPECIFIED</p> <p>INCHES IN STOCK</p>	
<p>TITLE: VERTICAL BRACKET</p> <p>W/TEFLON ASSEMBLY</p>	
<p>IS-3412-1</p>	
<p>OS FILE # 15-3412-1</p>	

- 62 -

File 71

PART NO.
LS-3463-1

MATERIAL SPECIFICATIONS:

1. NAME: TEFLON THREAD SEALANT TAPE
2. MATERIAL: 99% PTFE TEFLON (FOR STRONG CHEMICAL RESISTANCE)
3. TEMPERATURE RANGE: -400° TO +500° F.
4. GRADE: MILITARY
5. WIDTH: 1.50
6. THICKNESS: (.003)
7. ELONGATION: 50% MINIMUM
8. SPECIFIC GRAVITY: 0.90 G/CC
9. COLOR: WHITE
10. SPECIFICATIONS: MEETS MIL SPEC. T-27730A

NOTE:
1. REFERENCE MCMASTER-CARR PART NUMBER 6802K66.

REV.	DESCRIPTION	DATE	CHKD	APVD	ECN	00	TOLERANCES: XXX ±.01 XXX ±.009 FRACTION: 1/32 ANGLES: ±1° UNLESS SPECIFIED DIMENSIONS IN INCHES	MANUFACTURING: MUSCATINE, IA 52761 CORPORATE OFFICE: OSKALOOSA, IA 52577	FINISH: SEE ABOVE	TITLE: TEFLON SEALANT TAPE	PART NO. LS-3463-1
---	RELEASE	MLK	8/29/00	MLK							
		DRWN									

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3RD ANGLE PROJECTION
ANSI Y14.5-1994

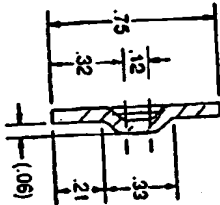
CD REL & US-M40-1

File 75

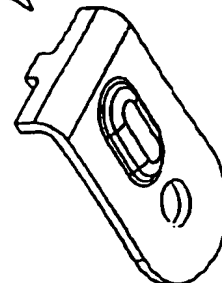
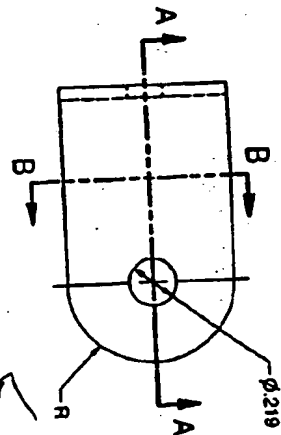
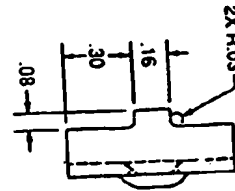
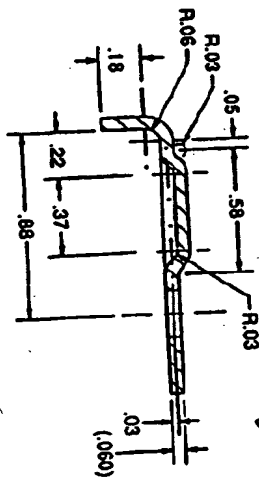
-63-

- NOTE:
1. REMOVE ALL BURRS. BREAK ALL EDGES AND SHARP CORNERS .01 MIN.
 2. FINISH: ANODIZE PER MIL SPEC MIL-A-8625F. TYPE II, CLASS 1, CLEAR, LIGHT ETCH.
 3. PARTS TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT.

Section B-B



Section A-A



FILE 7L

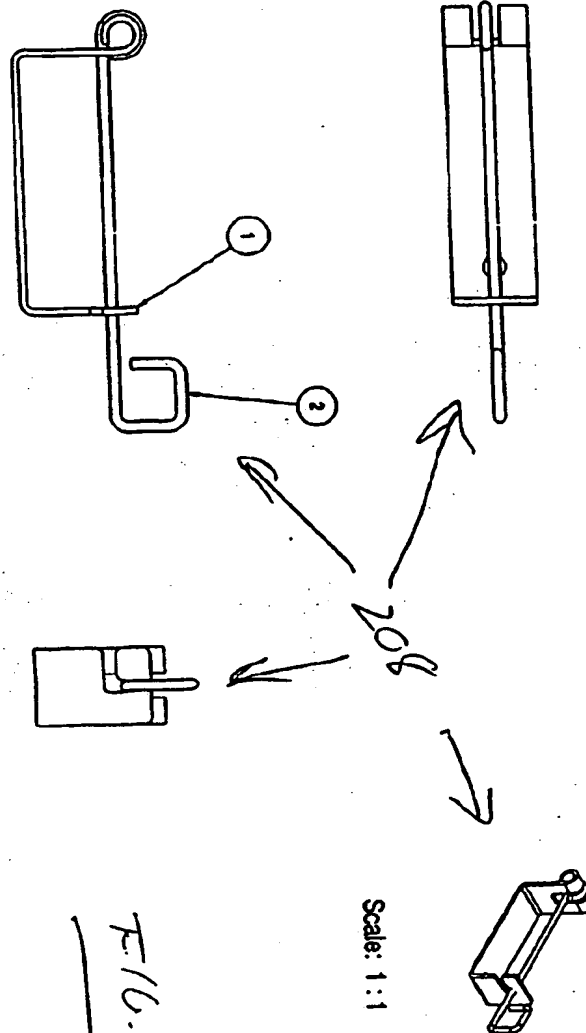
-65-

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REV	DESCRIPTION	DATE	BY
1	060 THK ALUMINUM		
2	5052 H32		
3	SEE NOTES		
4	PARABOLIC CLAMP - 2K		
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PART NO.
LS-3474-1



Scale: 1:1

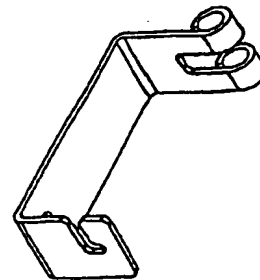
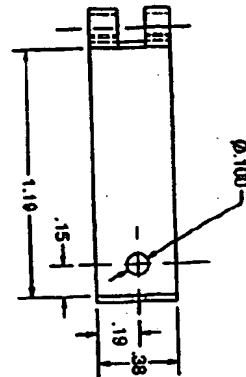
-66-

BILL OF MATERIALS PER UNIT		
ITEM	QTY	PART NUMBER
1	1	LS-3450-1
2	1	LS-3452-1

PART NO. LS-3408-1

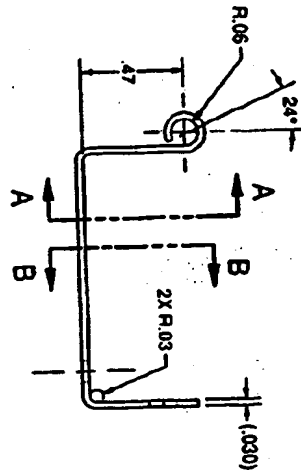
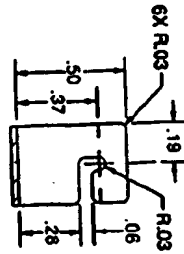
REV	DESCRIPTION	DATE	BY
1	PARAHOLOID SPRING CLAMP ASSEMBLY	12/18/79	CD
MATERIALS: SEE ABOVE			
FINISH: NONE			
TITLE: Paraholoid Spring Clamp Assembly - 2K			
PART NO. LS-3408-1			

FOR USE: 100%
MATERIALS: 100%
MATERIALS: 100%
MATERIALS: 100%

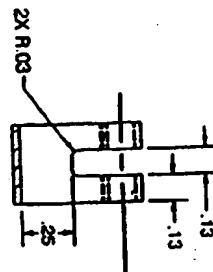
PART NO.
LS-3450-1

- 67 -

Section B-B



Section A-A



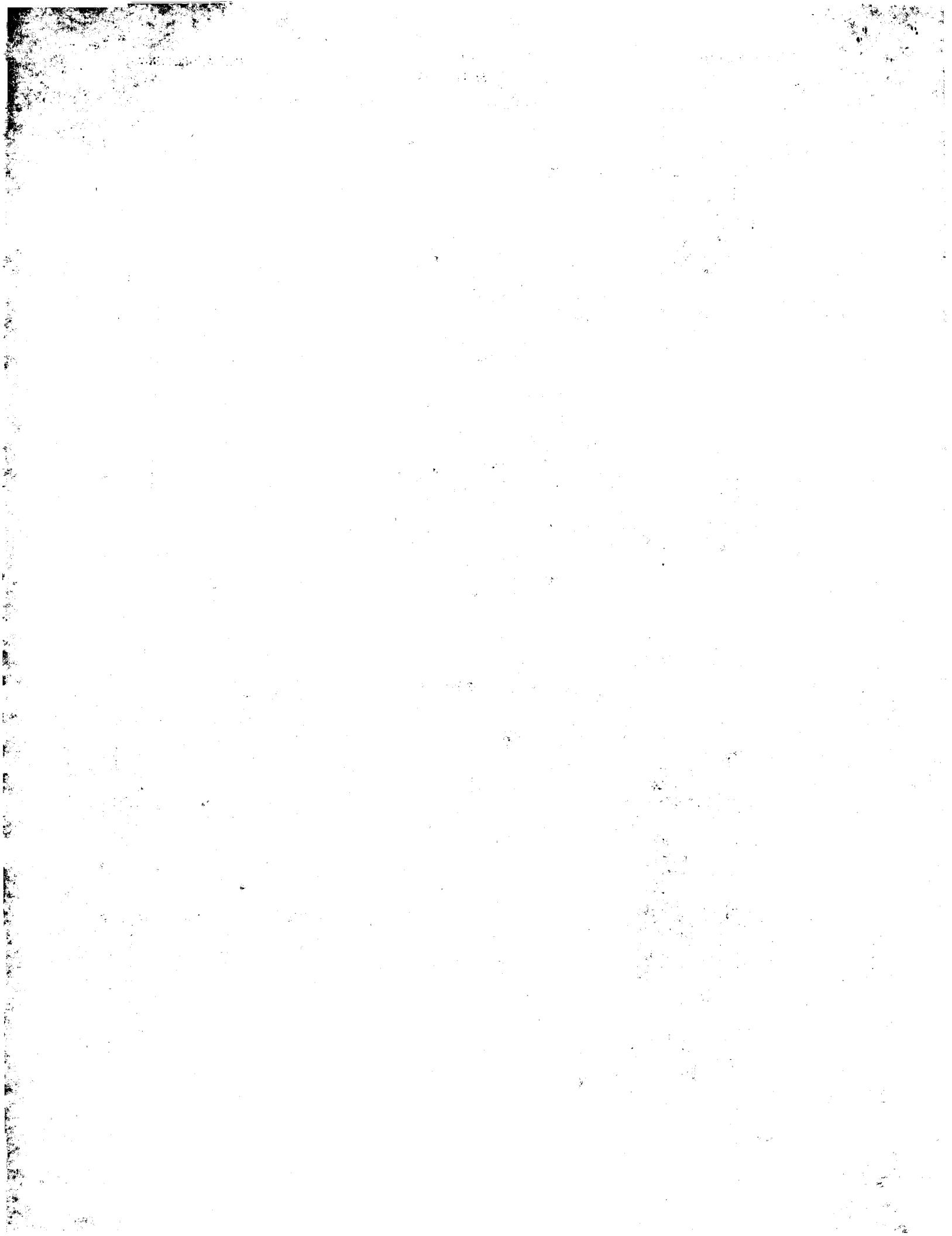
NOTE:

1. REMOVE ALL BURRS. BREAK ALL EDGES AND SHARP CORNERS .01 MIN.
2. FINISH: ANODIZE PER MIL SPEC MIL-A-8625F. TYPE II, CLASS 1, CLEAR LIGHT ETCH.
3. PARTS TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT.

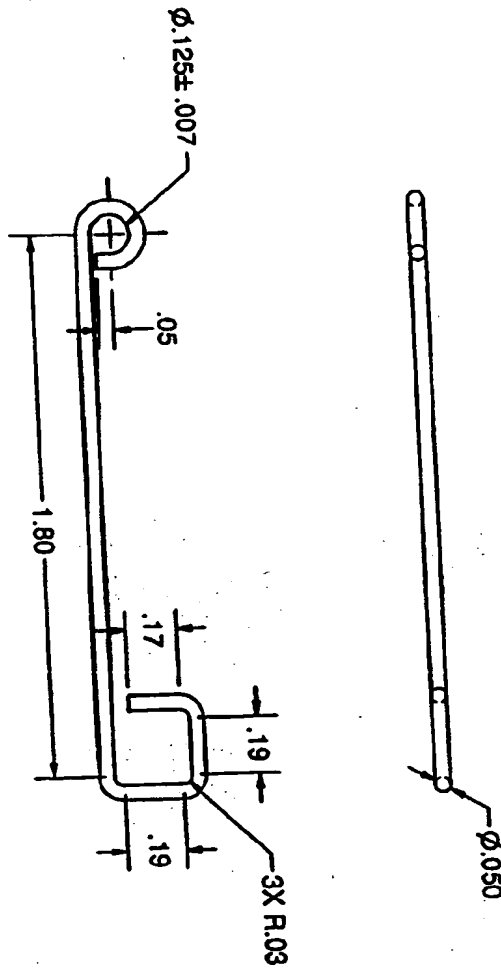
THE DIMENSIONS SHOWN ON THIS DRAWING ARE THE DIMENSIONS OF THE PARTS AND NOT THE DIMENSIONS OF THE ASSEMBLY. THE DIMENSIONS OF THE ASSEMBLY ARE SHOWN ON THE DRAWING OF THE ASSEMBLY.



REV.	DESCRIPTION	DATE	BY
1	INITIAL DESIGN - PARABOLOID SPRING CLAMP	10/1/01	LS
2	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
3	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
4	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
5	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
6	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
7	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
8	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
9	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
10	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
11	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
12	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
13	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
14	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
15	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
16	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
17	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
18	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
19	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
20	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
21	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
22	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
23	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
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29	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
30	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
31	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
32	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
33	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
34	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
35	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
36	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
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44	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
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50	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
51	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
52	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
53	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
54	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
55	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
56	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
57	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
58	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
59	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
60	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
61	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
62	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
63	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
64	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
65	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
66	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
67	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
68	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
69	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
70	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
71	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
72	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
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79	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
80	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
81	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
82	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
83	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
84	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
85	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
86	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
87	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
88	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
89	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
90	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
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92	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
93	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
94	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
95	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
96	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
97	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
98	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
99	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS
100	REVISION - PARABOLOID SPRING CLAMP	10/1/01	LS



PART NO.
LS-3452-1



NOTE:

1. REMOVE ALL BURRS. BREAK ALL EDGES AND SHARP CORNERS .01 MIN.
2. PASSIVATE PER ASTM A380.

FIG. 7-D

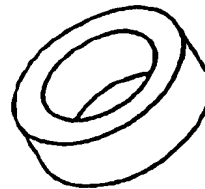
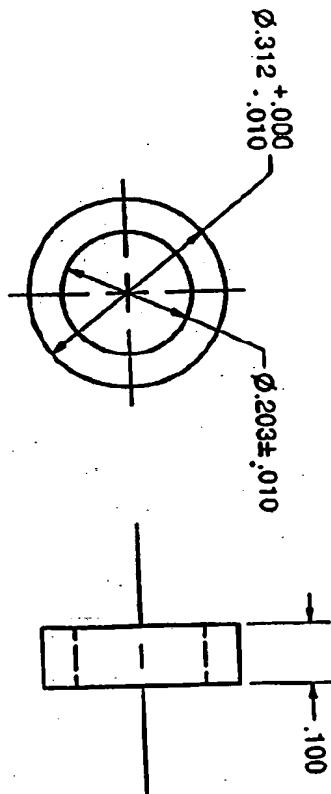
-68-

REV.		DESCRIPTION		DRN	DATE	CHKD			TOLERANCES: XX .01 XXX .005 PRACT. ±.02 ANGLES: 8°		MANUFACTURING: MUSCATINE, IA 52761 CORPORATE OFFICE: OKLAHOMA, IA 52177		ORIGIN: DATE:	
											MATERIAL: 302 STAINLESS STEEL SPRING TEMPER 1		CHND:	
											FINISH: HEAT TREAT SEE NOTE		APVD:	
											TITLE: Paraboloid Spring Clamp		SCALE: 2=1	
											Wt - 2K		PART NO.	
											LS-3452-1		CAD FILE P. 17-255-1-04	

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- 69 -

PART NO.
LS-3468-1



-71-

F/G. 7R

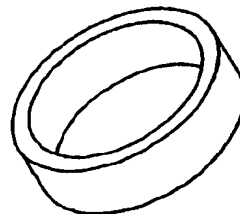
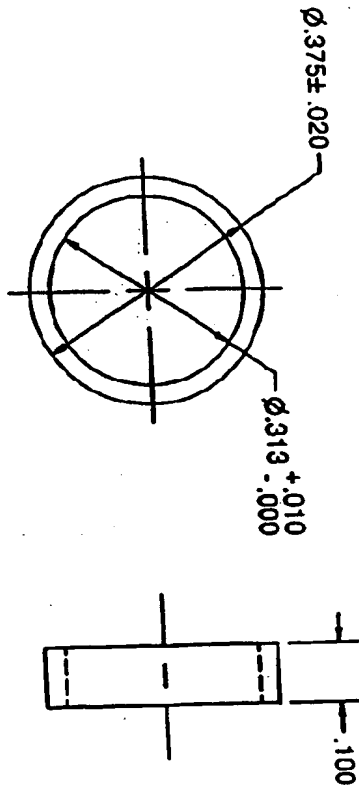
- NOTE:
1. REMOVE ALL BURRS. BREAK ALL EDGES AND SHARP CORNERS .01 MIN.
 2. PASSIVATE PER ASTM A380.
 3. PARTS TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT.

REV. DESCRIPTION				APVD				ECN				TOLERANCES:				MATERIAL: STAINLESS STEEL				DATE:											
DRWN				DATE				CHKD				JAN 8-01				FINISH: SEE NOTES				CHD:											
												JUN 8-003								APVD:											
												PRACT: 1/132				TITLE: Steel Bushing - 2K				SCALE: 4-1											
												ANGLES: 8°				PART NO.				LS-3468-1											
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PART NO.
LS-3470-1

-72-

NOTE:
1. REMOVE ALL BURRS. BREAK ALL EDGES AND SHARP CORNERS .01 MIN.

[illegible]

PART NO.
HDW-1019

MATERIAL SPECIFICATIONS:

1. NAME: SOCKET HEAD CAP SCREW-BUTTON HEAD
2. MATERIAL: 18-8 STAINLESS STEEL
3. SIZE: #10-24 UNC-2A X .50" LONG
4. FINISH: PASSIVATE PER ASTM A380
EMPICARD PER MUSCO MS-1005

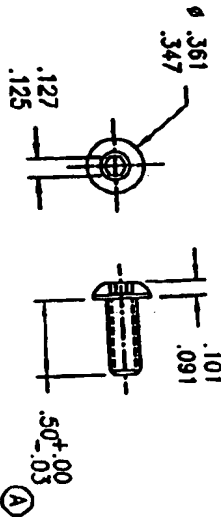


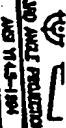
FIG. 7-7

-73-

NOTE:
1. FASTENER SHALL COMPLY WITH INDUSTRIAL FASTENER INSTITUTE STANDARDS.

2. PARTS TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT. (A)

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30 DAY PROTECTION
AND 1143-184

TOLERANCES:
XX ±.01
XXX ±.005
FRACTION: ±1/32
ANGLES: ±1°
UNLESS SPECIFIED
DIMENSIONS IN INCHES

MANUFACTURING: MUSCATINE, IA 52761
CORPORATE OFFICE: OSKALOOSA, IA 52577
MATERIAL: SEE ABOVE

FINISH: NONE

TITLE: CAP SCREW, SOCKET
#10-24 X .50" BTN HD

PART NO.

HDW-1019

CD FILE # 1005-1019

1. NAME: BUTTON HEAD CAP SCREW
2. MATERIAL: 18-8 STAINLESS STEEL
3. SIZE: #6-32 UNC-2A X .375" LONG
4. FINISH: PASSIVATE PER ASTM A380
EMPIGARD PER MUSCO MS-1005

Technical drawing of a mechanical part, likely a pin or shaft, showing two views: a top view and a side view. The top view shows a circular cross-section with a central hole. The side view shows the profile of the part, including a cylindrical section and a rectangular section. Dimensions are provided for both views.

Top View Dimensions:

- Outer diameter: .262
- Inner diameter: .250
- Radius: .044

Side View Dimensions:

- Top width: .073
- Width of the top section: .063
- Width of the middle section: .015
- Width of the bottom section: .38
- Bottom width: .00
- Bottom radius: .03

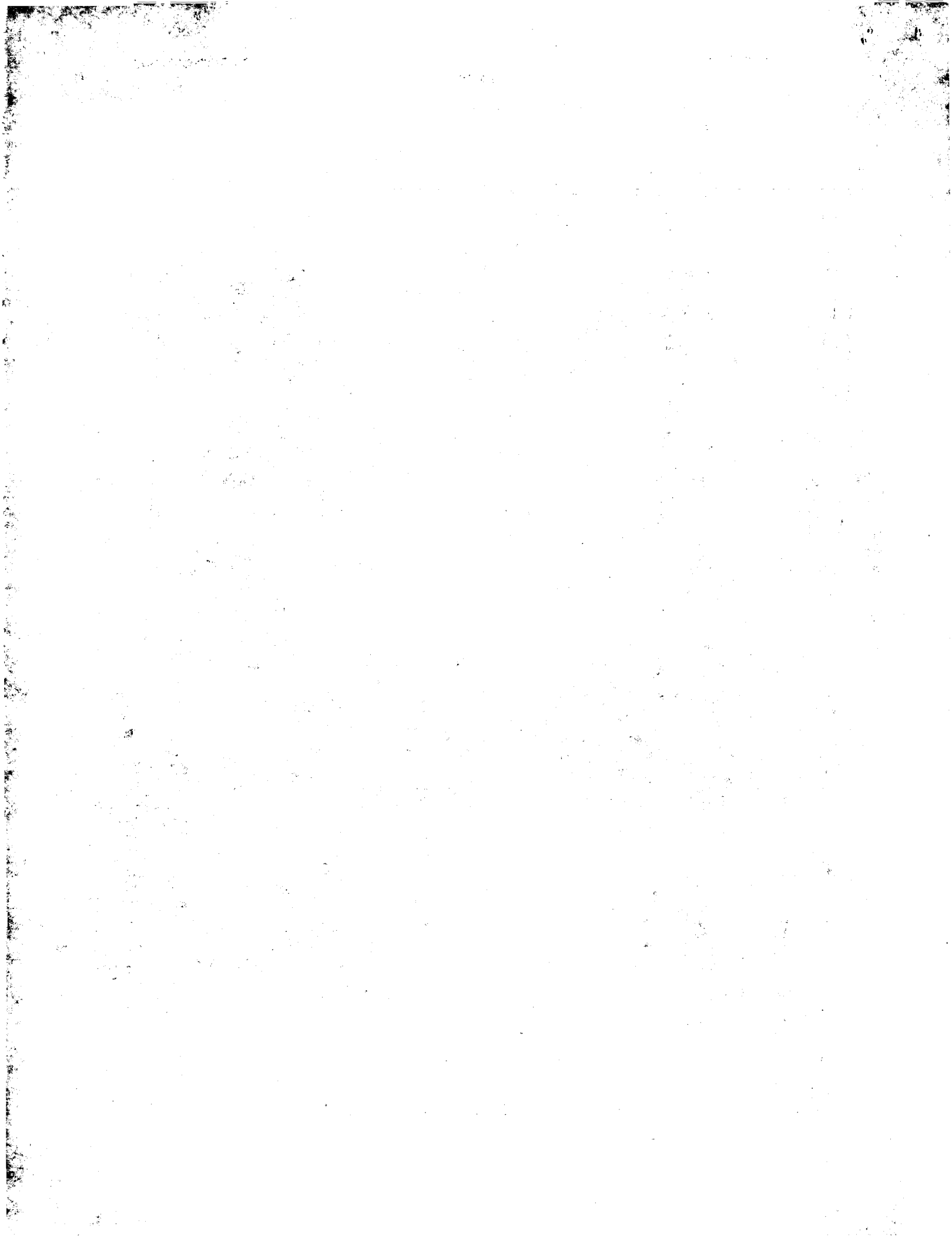
Fig. 7-4

- 74 -

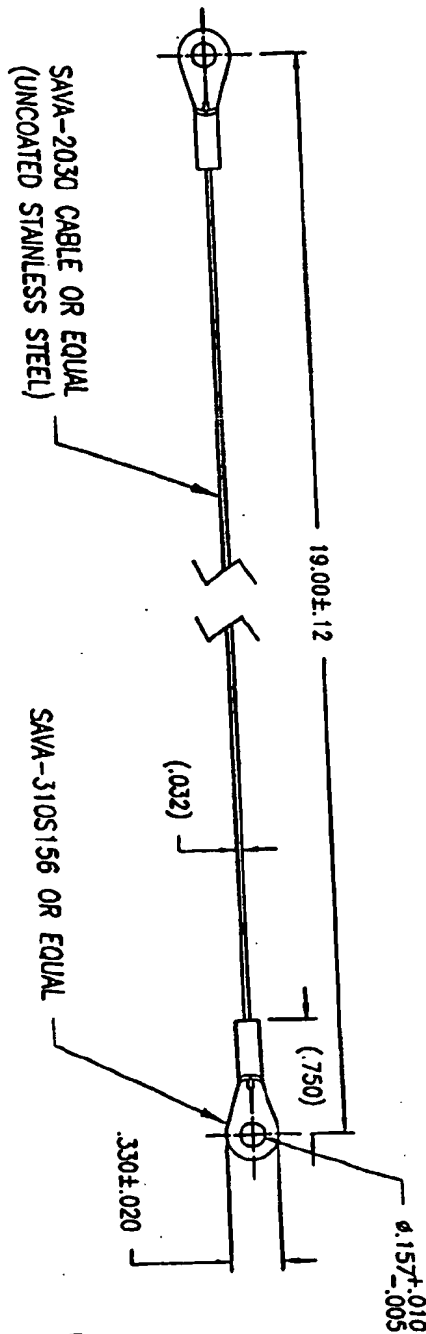
PART NO.
HDW-1086-1

NOTE:
1. FASTENER SHALL COMPLY WITH INDUSTRIAL FASTENER INSTITUTE STANDARDS.
2. PARTS TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT.

<p>2. PARTS TO BE CLEAN AND FREE OF OIL, GREASE, ETC.</p>	
<p>REV. 1</p>	
<p>The following statement is given as an advisory to the information for ordering other lifting bars, and reproduction of this drawing or use of the information for ordering other than the parts intended herein is at the purchaser's risk, without the written permission of Union Lifting, Inc. is prohibited.</p>	
<p>UNION LIFTING, INC.</p>	
<p>MANUFACTURING: MUSCATINE, IA 52761 CORPORATE OFFICE: OSOLAUNGA, IA 52557</p>	
<p>MATERIAL: SEE NOTE</p>	
<p>FINISH: SEE NOTE</p>	
<p>TOLERANCES: .XX ±.01 .XXX ±.005</p>	
<p>FRAC: ±1/32 ANGLES: ±1°</p>	
<p>UNLESS SPECIFIED DIMENSIONS IN INCHES</p>	
<p>HEAD CAP SCREW</p>	
<p>TITLE: 6-32 X 3/8 BUTTON [A]</p>	
<p>PART NO. HDW-1086-1</p>	
<p>CO FILE # 108-1084-1</p>	



PART NO.
LS-3478-1



NOTE:
1. PARTS TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT.

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UNLESS SPECIFIED
DIMENSIONS IN INCHES
FRACTIONS: 1/32
DECIMALS: ±.005
TOLERANCES:
XX ±.01



MANUFACTURING MUSCATINE, IA 52761
CORPORATE OFFICE OSKALOOSA, IA 52577

FINISH:
MATERIAL: SEE ABOVE
TITLE: RETAINING CABLE

APPRO: _____
SCALE: 1=1
PART NO.
LS-3478-1
GO FILE # US-3478-1

-75-

PART NO.
HDW-1089-1

MATERIAL SPECIFICATIONS:

1. NAME: LOCKNUT, TOPLOCK DEFORMED THREAD
2. MATERIAL: 18-8 STAINLESS STEEL
3. SIZE: #6-32
4. FINISH: PASSMATE PER ASTM A380.

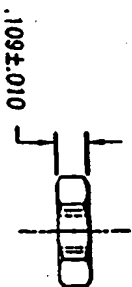
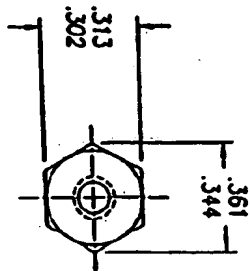
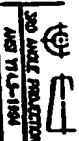


FIG. 7W

NOTE:
1. PARTS TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT.

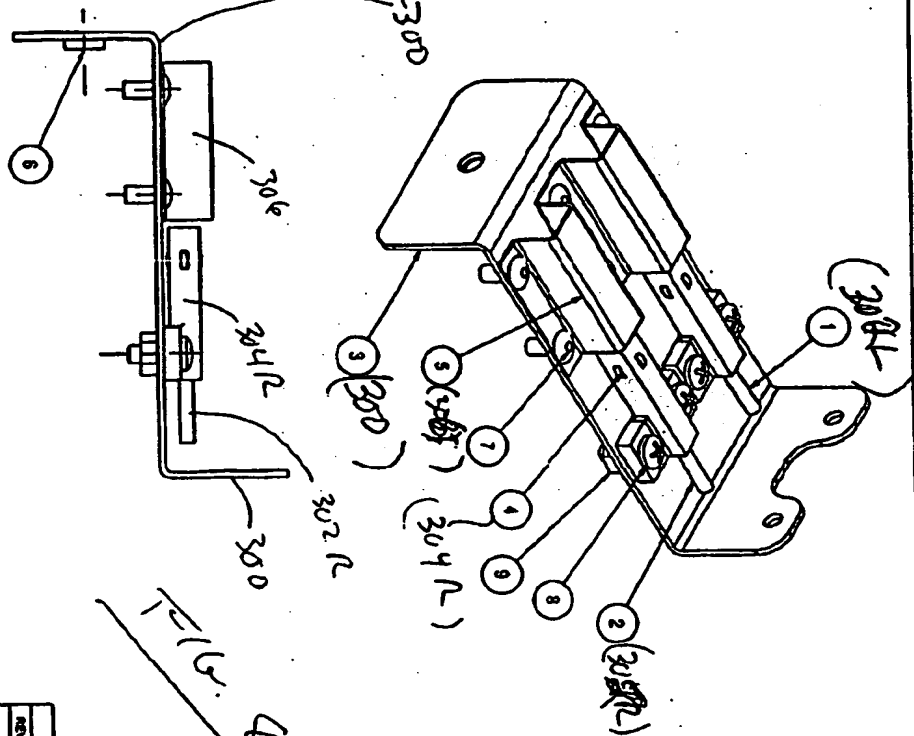
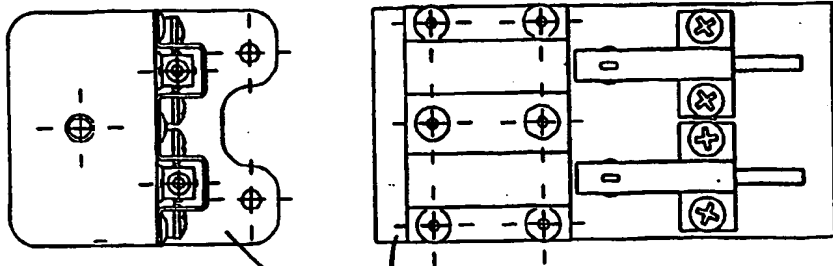
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THIRD ANGLE PROJECTION
UNLESS SPECIFIED
DIMENSIONS IN INCHES

TOLERANCES: XX ±.01 XXX ±.005		FINISH: SEE ABOVE		SCALE: 2=1	
ANGLES: ±1°		MATERIAL: SEE ABOVE		PART NO.	
FRACT: ±1/32		TITLE: LOCKNUT, TOPLOCK DEFORMED THREAC - #6-32		HDW-1089-1	
MANUFACTURING: MUSCATINE, IA 52761 CORPORATE OFFICE: OSWALDO, IA 52577		C		A	
D		B		C	
E		F		G	
H		I		J	
K		L		M	
N		O		P	
Q		R		S	
T		U		V	
W		X		Y	
Z		AA		AB	
AC		AD		AE	
AF		AG		AH	
AI		AJ		AK	
AL		AM		AN	
AO		AP		AQ	
AR		AS		AT	
AU		AV		AW	
AX		AY		AZ	
BA		BB		BC	
BD		BE		BF	
BG		BH		BI	
BJ		BK		BL	
BM		BN		BO	
BP		BQ		BR	
BS		BT		BU	
BV		BW		BX	
BY		BZ		CA	
CB		CC		CD	
CE		CF		CG	
CH		CI		CJ	
CK		CL		CM	
CN		CO		CP	
CQ		CR		CS	
CT		CU		CV	
CW		CX		CY	
CZ		DA		DB	
DC		DD		DE	
DF		DG		DH	
DI		DJ		DK	
DL		DM		DN	
DO		DP		DQ	
DR		DS		DT	
DU		DV		DW	
DX		DY		DZ	
EA		EB		EC	
ED		EE		EF	
EG		EH		EI	
EJ		EK		EL	
EM		EN		EO	
EP		EQ		ER	
ES		ET		EU	
EV		EW		EX	
EY		EZ		FA	
FB		FC		FD	
FE		FF		FG	
FH		FI		FJ	
FK		FL		FM	
FN		FO		FP	
FQ		FR		FS	
FT		FU		FV	
FW		FX		FY	
FZ		GA		GB	
GC		GD		GE	
GF		GG		GH	
GI		GJ		GK	
GL		GM		GN	
GO		GP		GQ	
GR		GS		GT	
GU		GV		GW	
GX		GY		GZ	
HA		HB		HC	
HD		HE		HF	
HG		HH		HI	
HJ		HK		HL	
HM		HN		HO	
HP		HQ		HR	
HS		HT		HU	
HV		HW		HX	
HY		HZ		IA	
IB		IC		ID	
IE		IF		IG	
IH		II		IJ	
IK		IL		IM	
IN		IO		IP	
IQ		IR		IS	
IT		IU		IV	
IW		IX		IY	
IZ		JA		JB	
JC		JD		JE	
JF		JG		JH	
JI		JJ		JK	
JL		JM		JN	
JO		JP		JQ	
JR		JS		JT	
JU		JV		JW	
JX		JY		JZ	
KA		KB		KC	
KD		KE		KF	
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KS		KT		KU	
KV		KW		KX	
KY		KZ		LA	
LB		LC		LD	
LE		LF		LG	
LH		LI		LJ	
LK		LL		LM	
LN		LO		LP	
LQ		LR		LS	
LT		LU		LV	
LW		LX		LY	
LZ		MA		MB	
MC		MD		ME	
MF		MG		MH	
MI		MJ		MK	
ML		MN		MO	
MP		MQ		MR	
MS		MT		MU	
MV		MW		MX	
MY		MZ		NA	
NB		NC		ND	
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NR		NS		NT	
NU		NV		NW	
NX		NY		NZ	
OA		OB		OC	
OD		OE		OF	
OG		OH		OI	
OJ		OK		OL	
OM		ON		OO	
OP		OQ		OR	
OS		OT		OU	
OV		OW		OX	
OY		OZ		PA	
PB		PC		PD	
PE		PF		PG	
PH		PI		PJ	
PK		PL		PM	
PN		PO		PP	
PQ		PR		PS	
PT		PU		PV	
PW		PX		PY	
PZ		QA		QB	
QC		QD		QE	
QF		QG		QH	
QI		QJ		QK	
QL		QM		QN	
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QX		QY		QZ	
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RJ		RK		RL	
RM		RN		RO	
RP		RQ		RR	
RS		RT		RU	
RV		RW		RX	
RY		RZ		SA	
SB		SC		SD	
SE		SF		SG	
SH		SI		SJ	
SK		SL		SM	
SN		SO		SP	
SQ		SR		SS	
ST		SU		SV	
SW		SX		SY	
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TV		TW		TX	
TY		TZ		UA	
UB		UC		UD	
UE		UF		UG	
UH		UI		UJ	
UK		UL		UM	
UN		UO		UP	
UQ		UR		US	
UT		UU		UV	
UW		UX		UY	
UZ		VA		VB	
VC		VD		VE	
VF		VG		VH	
VI		VJ		VK	
VL		VM		VN	
VO		VP		VQ	
VR		VS		VT	
VU		VV		VW	
VX		VY		VZ	
WA		WB		WC	
WD		WE		WF	
WG		WH		WI	
WJ		WK		WL	
WM		WN		WO	
WP		WQ		WR	
WS		WT		WU	
WV		WX		WY	
WZ		XA		XB	
XC		XD		XE	
XF		XG		XH	
XI		XJ		XK	
XL		XM		XN	
XO		XP		XQ	
XR		XS		XT	
XU		XV		XW	
XX		XY		XZ	
YA		YB		YC	
YD		YE		YF	
YG		YH		YI	
YJ		YK		YL	
YM		YN		YO	
YP		YQ		YR	
YS		YT		YU	
YV		YW		YX	
YZ		ZA		ZB	
ZC		ZD		ZE	
ZF		ZG		ZH	
ZI		ZJ		ZK	
ZL		ZM		ZN	
ZO		ZP		ZQ	
ZR		ZS		ZT	
ZU		ZV		ZW	
ZX		ZY		ZZ	

CSU FILE # 1089-1089-1



- NOTE:
1. PARTS TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT.
 2. TORQUE ITEM 9 TO 77 INCH POUNDS.

1. The drawings are prepared in accordance with the standards of the Department of Defense and the Department of the Army. The drawings are prepared in accordance with the standards of the Department of Defense and the Department of the Army.



1. The drawings are prepared in accordance with the standards of the Department of Defense and the Department of the Army. The drawings are prepared in accordance with the standards of the Department of Defense and the Department of the Army.

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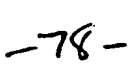
Have case
connected assembly

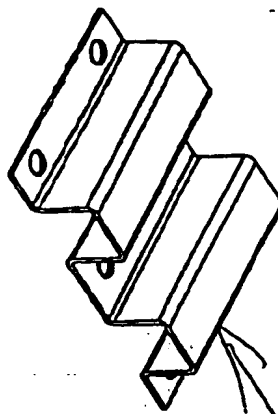
PART NO.
LS-3405-1

BILL OF MATERIALS PER UNIT

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	LS-1651B-11	Wire Assembly Black Poly/Sig 11"
2	1	LS-1651W-11	Wire Assembly White Poly/Sig 11"
3	1	LS-3405-1	Connector Bracket - 2K
4	2	LS-3405-1	CONNECTOR HOUSING
5	1	LS-3405-1	Connector Guide - 2K
6	1	LS-235	Pen nut 10-24
7	6	Hdw-1052	Pop rivet 5/22 dia
8	4	Hdw-1022	Screw 8-32 x 1/2 pan head
9	4	Hdw-1015	Locking 8-32

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306

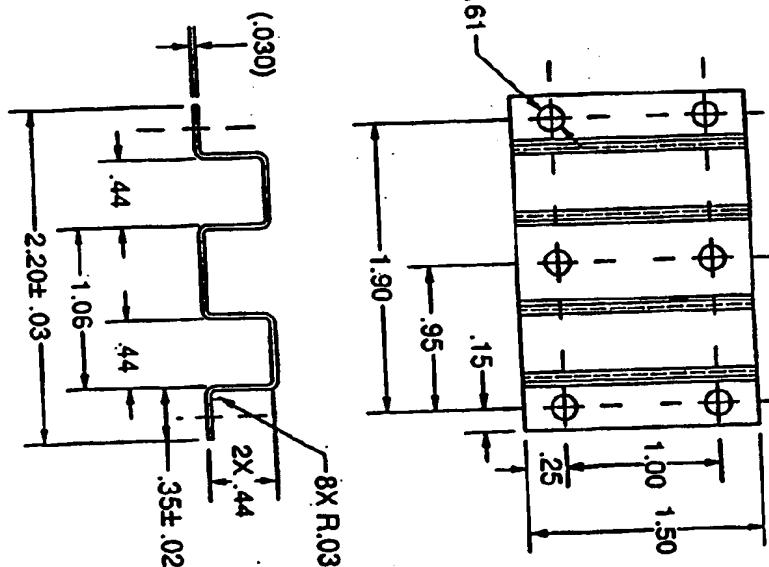
Fly 8C

- NOTE:**
1. REMOVE ALL BURRS. BREAK ALL EDGES AND SHARP CORNERS .01 MIN.
 2. FINISH: ANODIZE PER MIL SPEC MIL-A-8625F, TYPE II, CLASS 1, CLEAR, LIGHT ETCH.
 3. PARTS TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT.

REV.	DESCRIPTION	DRWN	DATE	CHKD	APVD	ECN

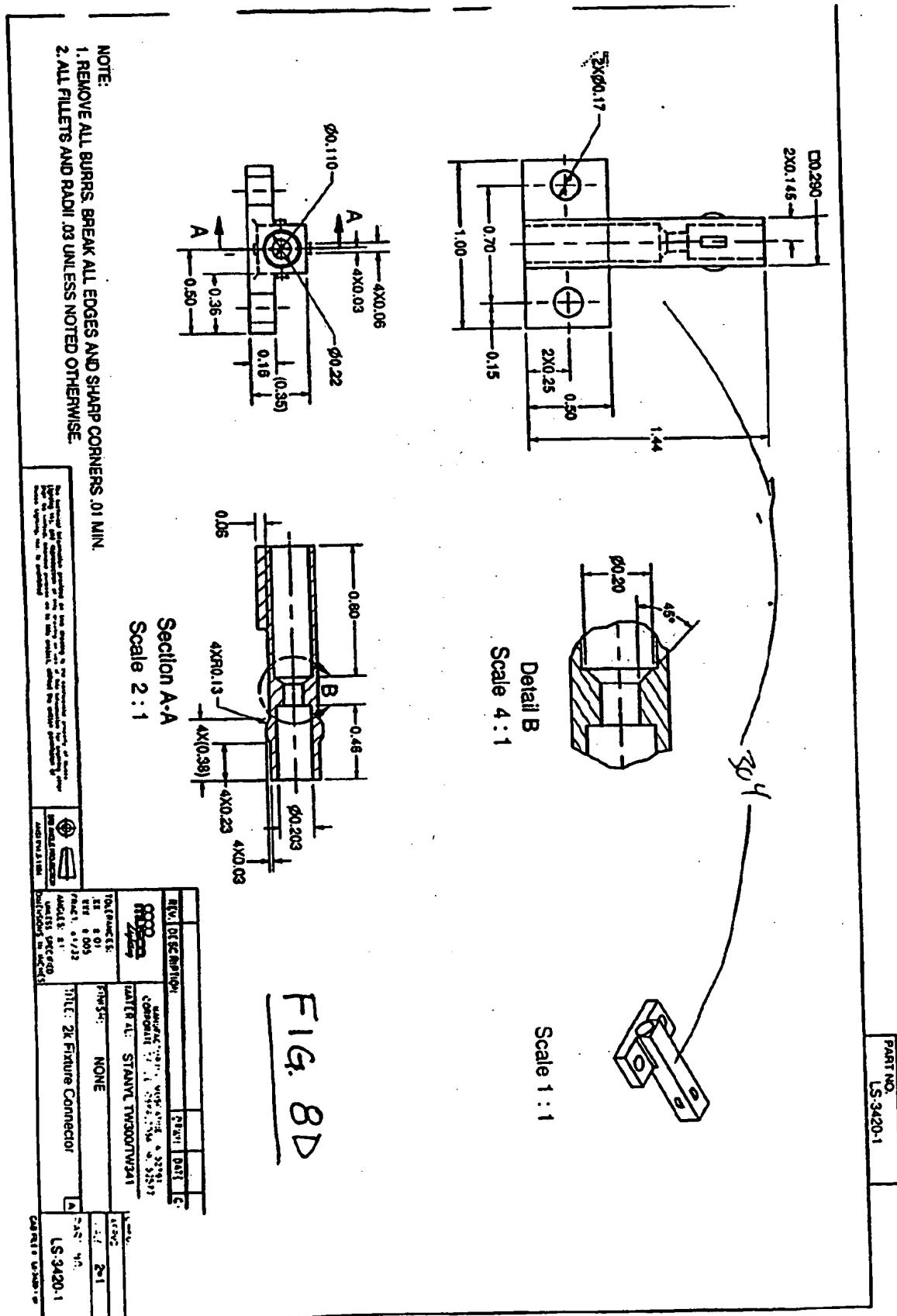
THE TECHNICAL INFORMATION CONTAINED ON THIS DRAWING IS THE CONFIDENTIAL PROPERTY OF MOORE ELECTRONICS, INC. AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF MOORE ELECTRONICS, INC. IS REPRODUCIBLE.

		TOLERANCES: XX .01 .XX .005 FRACT: 1/32 ANGLES: 90° UNLESS SPECIFIED DIMENSIONS IN INCHES
MATERIAL: 6061-T6 ALUMINUM FINISH: SEE NOTES TITLE: Connector Guide - 2K		DRIVE DATE: CHKD: APVD: SCALE: 1"=1" PART NO. LS-3492-1 CAD FILE #: LS-3492-1.dwg



-79-

 PART NO.
 LS-3492-1



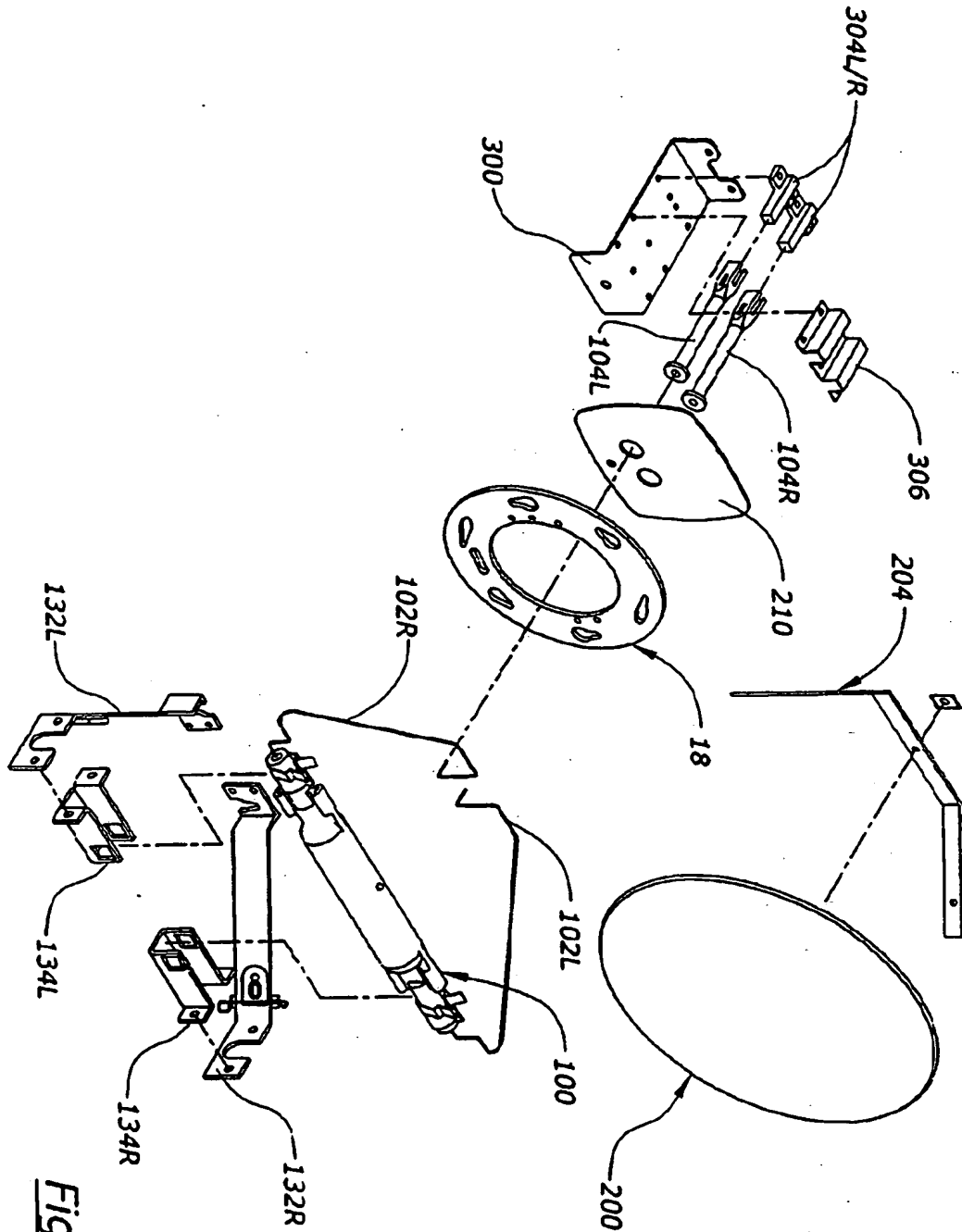
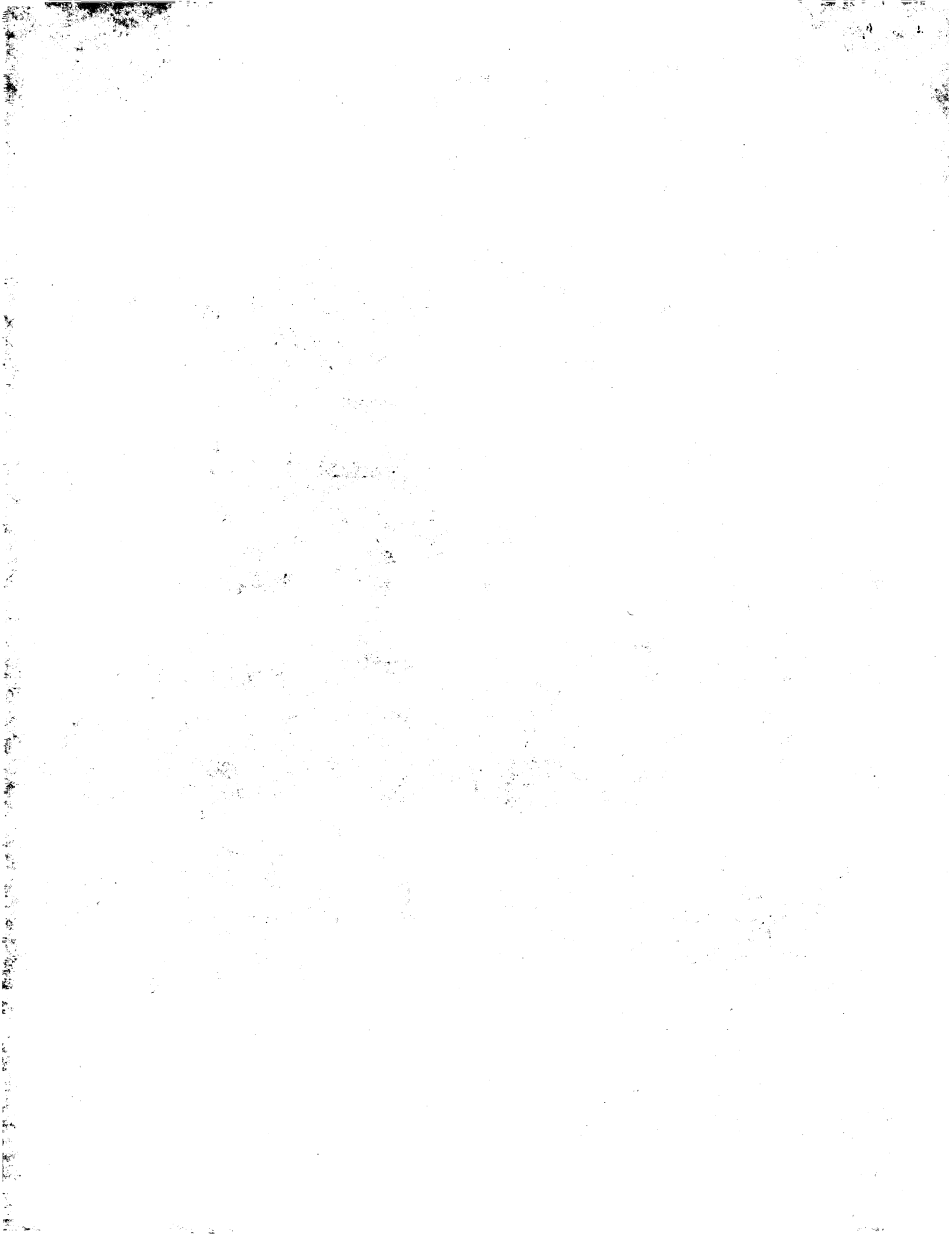


Fig. 9A



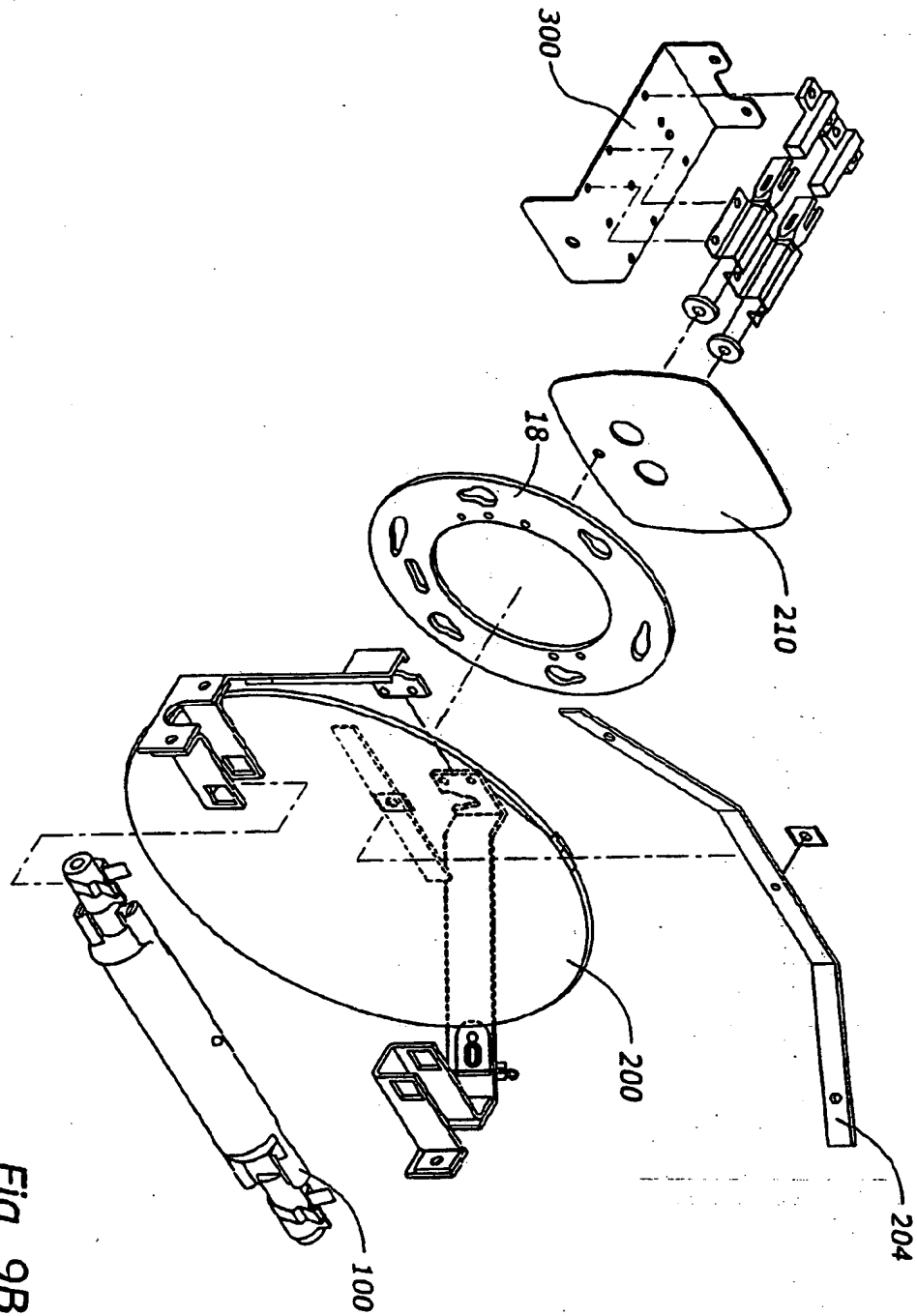


Fig. 9B

PART NO. LS-3496-1

210

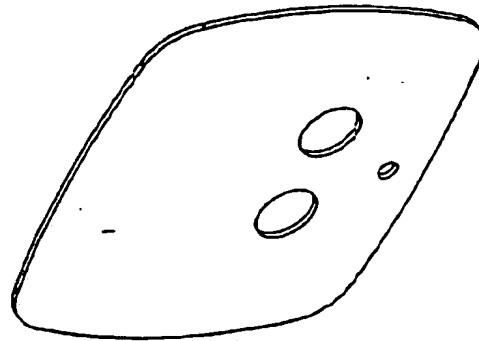
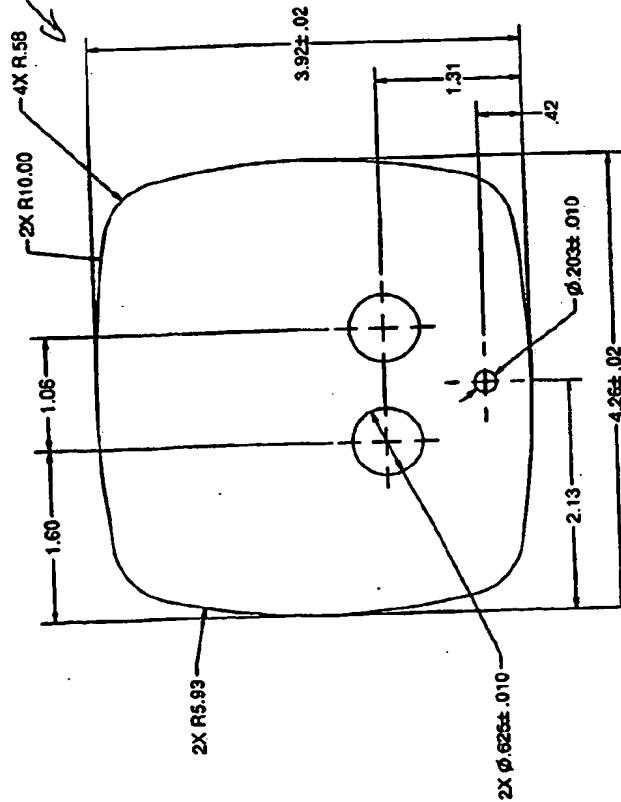


Fig. 9L

REV.	DESCRIPTION	DATE	CHK.
1	MANUFACTURING: NUCLEAR, IN 4700 CORPORATE OFFICE: OSALOGMA, IN 47311		
2	MATERIAL: 6061 T3 ALUMINUM		
3	FINISH: SEE NOTES		
4	TITLE: Aluminum Firewall - 2K		
5	SCALE: 1=1		
6	PART NO. LS-3496-1		



THE SURFACE FINISHES SHOWN ON THIS DRAWING ARE NOT CONSIDERED A PART OF THE DESIGN. THE SURFACE FINISHES SHOWN ON THIS DRAWING ARE NOT CONSIDERED A PART OF THE DESIGN. THE SURFACE FINISHES SHOWN ON THIS DRAWING ARE NOT CONSIDERED A PART OF THE DESIGN.

- NOTE:
1. REMOVE ALL BURRS. BREAK ALL EDGES AND SHARP CORNERS .01 MIN.
 2. FINISH: ANODIZE PER MIL SPEC MIL-A-8625F. TYPE II, CLASS 1. CLEAR, LIGHT ETCH.
 3. PART TO BE CLEAN AND FREE OF OIL, GREASE AND DIRT.

